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Cream of Nujol contains no sodium benzoate

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Influenza

WALLACE P. MOORE. M.D..
Memphis, Tenn.

The angel of death hovered o'er hill and plain,
While we took sad toll of the wounded and slain.

In attempting to offer observations and some suggestions on a malady upon which volumes have been written, I may reasonably expect censure and criticism. Nevertheless I feel that we, as physicians, should not cease to be wary of the hydra-headed monster that attacked the world with such devastation in 1918, the mere mention of which causes the mind to run the whole gamut of human emotions, and to see in fancy every pathological change to which human flesh is heir.

Truly it may be said that where war "has slain its thousands" "Flu" "has slain its tens of thousands" and has left in its wake millions of physical and mental cripples. It is estimated that approximately 550,000 died during the pandemic of 1918.

In his splendidly fluent style, Dr. Henry A. Christian of Harvard Medical School has graphically and lucidly described this dread malady, and should these lines reach him I wish to thank him for the very great help he has been to me.

His definition follows:—

"Influenza is a disease of undetermined etiology, which is sporadic, epidemic and periodically pandemic, causing prostration, fever, almost always inflammation of the respiratory mucous membranes and with, in a large percentage of patients, a bronchopneumonia, or sometimes gastro-intestinal disturbances."

As stated in the definition, the etiology has not been definitely determined.

All older people remember the epidemic of 1889-93 when this disease was dubbed la grippe, soon shortened to gripp, and some may remember the lay press carrying a picture of a bony hand squeezing a scrawny human. This disease was also called Spanish influenza at that time.

Pfeiffer at that time described a germ to which he attributed la grippe or Spanish influenza. Pfeiffer's germ has been much discussed ever since.

The pandemic of 1918 stands out so prominently that all others of a lesser grade would naturally be compared to it. These cases of 1889 to 1893 while having much in common with those of 1918, yet were somewhat different.

The onset was sudden, pain and prostration severe as in 1918, but there was more of a catarrhal condition. There was a broad thickened tongue covered with a dense white fur. The mental and nervous symptoms, while severe at times, were not so lasting. The attendant bronchitis or pneumonia, if anything, seemed more frequent and more dreaded if such could be; the term grip-pneumonia was frequently heard.

Following in the pathway of this disease of epidemic of 1889 and 1893 was a subacute inflammatory condition of the mucous surfaces, termed catarrh.

In the fall of 1914 there was an epidemic or possibly it was only endemic of influenza which carried with it the presence of another germ as a complicating agent, viz:—the staphylcoccus. Following this there was an outbreak of boils, carbuncles and empyemic chests which seemed to follow too closely to be overlooked.

The pandemic of 1918 began in the early fall of the year, and some cases so nearly assumed the appearance of typhoid that I know of several erroneously made diagnoses. Therewas the nose-bleed, the sordes on the teeth, the coated tongue with red edges, the distended, tender abdomen, fever, prostration and delirium.

In this epidemic the streptococcus seems to have played quite an important role, as evidenced by the similitude to septicemia, the extreme prostration and even the quick death.

As to the epidemiology, I refer the reader to any good article on this subject. Dr. Christian's article

goes at length into this. Suffice it to say that I have a newspaper clipping which speaks of Spanish influenza sweeping the U. S. back in 1789. Capt. George Cross of Charleston, S. C. wrote on Oct. 12 of that year: "The influenza still prevails here and numbers have caught it. None are dangerously ill."

Quoting from Dr. Christian again:—

"The history of these recurrences is full of interest; an entertaining account is to be found in the Annals of Influenza, published by the New Sydenham Society in 1852. In it these outbreaks are traced back to the sixteenth century. Influenza seems to be a contact infection with an incubation period of two days."

After the first few days the contagiousness seems to subside.

During each fall, winter, and spring we have sporadic cases and it behooves us to watch them closely.

As to the pathology, there are some few points to which I wish especially to direct attention.

The tracheitis, bronchitis, and broncho-pneumonia are very familiar. The mixed bacterial flora; influenza bacilli, hemolytic streptocci, and pneumocci are invaders usually found when a case persists for a time. Lungs are engorged, moist and bloody. Peribronchial thickening, as revealed by the *x*-ray, often persists for a long time. In looking over the pathology I find this,—"a patient dying late in the disease from sudden suffocation."

This was such a frequent picture that we all remember it. One of my colleagues remarked to me that, "they seemed to drown in their own secretions."

Should the reader review his pathology, he will note degenerative changes in the skeletal muscles. This change means much to patient. Not much, if any, pathology is recorded of the ductless glands, yet, I am satisfied from clinical manifestations that they undergo many changes, as for instance the shock at beginning of an attack. Some one has referred to shock as an "insult to the suprarenal gland." If the suprarenal gland then is insulted the whole glandular system takes up the insult and we have a general glandular disturbance.

Now to the clinical picture.

We all know it so well that we need only to recapitulate a little; namely:—

Sudden onset, possibly following a few days feeling of malaise. The 1918 variety, ruddy color, sometimes purple lips, red eyes, shaking, almost stumbling gait, severe pain complained of as,—severe backache, headache, photophobia, general aching, extreme chilliness, even to rigors, fevers, 102° to 104°. The toxemia is extreme; the bowel very sluggish; urine highly colored and scanty.

The nervous symptoms assume various forms and may cause intense pain, restlessness, or extreme irritability.

This condition may last for a few days to a week or month, and may become complicated by a very severe laryngitis, bronchitis, broncho-pneumonia, or gastro-intestinal disturbance. Any one or all the sinuses may become involved. Inflammation may spread to the mastoid cells.

The antrum of Highmore may cause much distress and pain, and the frontal sinus often produces a painful, persistent headache. A very serious complication is a phlebitis, which in its acute stage is very, very painful and leaves the patient with a more or less permanent disability.

The convalescence from "flu" is very tedious, even if there is no complication. The patient emerges weak and prostrated, and he may be left with a crippled lung, a dragging limb, a chronic sinus trouble, or a phychosis, mild or severe.

The treatment of a disease, for which there is no specific, taxes the ingenuity of physicians severely at times, and for the treatment of influenza there is certainly no specific. We feel we are justified in outlining a simple system of treatment, for while doing an active general practice during 1918, at a time when our small city was depleted of physicians due to the call from the front, we were fortunate enough to have one hundred percent recoveries.

Our first instructions sent the patient to bed with hot bottles all about him.

The very first medicine was:

℞ Calomel ..... grs. iv to x
Caffein ..... grs. iii
Salol ..... gr. xvi
Sodii Bicarb..... gr. x. M.
Ft. cap. No. iv.
Sig. One every hour.

Often times this had to be repeated, due to more or less paralysis of bowel and extreme toxemia.

Then there came the question of nutrition and stimulation, often a very vexing problem.

We insisted upon liquid nourishment and were often forced to rely upon a prepared food, such as trophonine, as this proved to be both stimulating and nutritious.

Solid food seemed to be badly tolerated and sometimes caused a rise of temperature and other symptoms.

For the disagreeable nervous and painful symptoms, we chose tinctura opii camphorata in dram doses, as less deleterious and more potent than numerous others. For the reduction of temperature we prescribed dram doses of spirits aetheris nitrosa.

If the patient did not respond to the simple expedients, and growing worse, become cyanatic, or if the fever remained at 104° to 105°, for an undue length of time, with a muttering delirium, we resorted to a proctoclyses of normal salt solution or a hypodermoclysis of this same simple solution, after which we were rewarded by seeing these serious symptoms disappear. It was necessary often times to repeat this procedure.

The idea of this was borrowed from our surgical friends, as we found that surgical patients were not the only ones shocked. The patient was kept in bed three or four days after the fever and other symptoms had subsided.

Whereas we found the disease difficult to manage, the convalescence was even more trying.

Dilapidated is the only word that will express the condition of the patient emerging from anything like a severe attack of influenza. Many of the worst conditions were of a psychic nature, many having the disposition entirely changed.

We resorted to every combination considered of tonic value, from palatable mixtures to diabolically bitter nauseating doses, and at last became more than partial to the endocrine group.

A patient put upon two mixed gland tablets such as protonuclein three or four times a day was pulled back to the normal so much more quickly, and naturally, that we feel that this treatment certainly merits trial by others.

We found a good addition to this form of therapy

(Concluded on page 46)

The Relation of Anthracosis to Tuberculosis and Pneumonia

WILLIAM P. NOLAN, M.D.,
New York.

Urban communities whether large or small have their smoke and soot problem, commonly termed "nuisance" even though the amount of carbon in the air is the best index to the prosperity of such community.

The breathing in of carbon particles by city dwellers and workers in various industries, or more properly the result of this inhalation has been termed anthracosis and this word implies both the discoloration and tissue changes in the lungs.

Anthracosis may well be termed a community disease, indigenous and to be reckoned with not so much from a standpoint of our mental or physical comfort and cleanliness but because it has a tremendous and definite effect upon our two specific community lung diseases namely, tuberculosis and pneumonia.

These two diseases represent respectively the chronic and acute type of lung disease and it is the purpose of this study to point out the marked difference in the effect of anthracosis on the two different types.

In order to comprehend fully the effect of the inhalation of carbon particles it is necessary to review for a moment the histological anatomy of the lung. Each lobe of the lung is subdivided into minute lobules, which in turn are made up of alveoli in close association and separated from each other by their single layer of epithelium.

Everywhere permeating this tissue are minute capillaries made up of a single layer of endothelial cells, and between the tiny air sacs begin the ramifications of the lymphatic channels which form a delicate meshwork surrounding each alveolus. The lymphatic channels converge as they pass centrally, uniting with others of the same lobule at nodal points, later uniting with others from different lobules and still further onward they are traced through small collections of lymphatic tissue, and finally go to form the definite channels which pass on to the peribronchial lymph nodes. The lymphatic drainage is always toward the root of the lung and the final destination is the large lymph nodes at the hilus. Micro-organisms or foreign particles which succeed in passing the protective barriers constituted in the nose, mouth, or ciliated epithelium of the upper air passages must pursue the same route in reaching their final fixed position in the lung.

Entrance to the human body of the tubercle bacillus by direct inhalation is a natural and common way and an attempt is herewith made to follow the bacillus from the time of inspiration until it is deposited in its final resting place, where, finding the soil favorable to its development and proliferation, it sets up its cowardly and insidious granulomatous reaction. After inhalation the bacillus comes to lie on the epithelial surface of the alveolus. This is the first step in the process of infection, and here we have the first response on the part of the tissue cells to combat the new invader.

Up until recently and previous to the excellent experimental work of Klotz, Haythorn, Permar, Corper and others it was thought that the normal epithelial cells lining the alveoli furnished the phagocytes which took up the battle against the tubercle bacillus or any other invader of lung tissue. Permar in a series of experiments, using rabbits and guinea pigs has shown conclusively that the first phagocyte entering into the inflammatory reaction following the initial infection is a mononuclear leucocyte derived from the endothelial lining of the tiny capillaries which everywhere traverse the alveolar wall, and he also corroborated Haythorn's findings that the epithelial cells of the alveoli are very little or not at all phagocytic. In his experiments, in which he marked the cells by the intravenous injection of a vital stain, he was able to watch the origin, development, migration and fate of lung phagocytes. The proliferation of these lung phagocytes was produced by the intratracheal injection of carmen powder, an inert foreign particle, yet capable of bringing forth a counter-reaction on the part of the tissue cells. Once called upon by the irritation of carbon particles or tubercle bacilli, these phagocytes begin proliferation immediately from the endothelial lining of the capillary walls, and being endowed with the power of ameboid motion thread their way first through the capillary wall and thence penetrate between the epithelial cells of the alveoli and come to lie within the walls of the alveolus in which the irritant is present.

Having gained the interior of the alveolus the phagocyte at once begins the work of ingesting the new invader, taking it up readily, the cytoplasm of the cell often becoming completely filled. Still possessing the power of ameboid motion the loaded phagocyte, seeking to rid the alveoli of the irritant, again penetrate between the epithelial cells of the alveolus and comes to lie in the tiny lymphatic channels just outside the alveolar wall.

Having previously reviewed the histological make-up of a lung lobule and the course of the lymphatic channels from the lobule, it is plain to be seen that the phagocyte with its ingested cargo has only one course to pursue, namely, follow the lymph stream from periphery of the lobule toward the particular lymph node draining this area. By identically the same route as the foreign particle the tubercle bacillus gaines entrance into the lung. The bacillus is ingested by the same phagocytes and likewise deposited in the lymphatics, to follow the same course as that above describe for the inert foreign carbon particle.

What is the tissue reaction resulting from the inhalation of coal dust, smoke, soot or other carbonaceous material? We well know that the existence of a low grade chronic irritation anywhere in the body always brings forth a counter-irritation—inflammation, and the end result of any inflammation is necrosis of the tissue, or the formation of fibrous connective tissue without the process of necrosis.

The amount of fibrous tissue formed would seem to depend upon the amount and length of time of the irritation, which as a rule it does no doubt, but at times it may be greatly out of proportion to the amount of irritation present. The fibrosis may become so dense as to completely occlude the lymph spaces, and when traced further centrally, to transform the lymph nodes into dense scar tissue masses. Once formed, this new connective tissue becomes permanent, serving a sentence equal to the duration of the host's life.

In anthracosis of the lung even when examined macroscopically one may readily palpate small nodular fib-

rous masses on the surface of the lung which are quite uniformly pea size but may attain a much greater size, even to almost the size of a golf ball. Upon closer examination the tissue gives the appearance of being dark in color, often black, due to the presence of pigmented foreign particles. Inhaled foreign particles have no predilection for any particular part of the lung but are distributed to all parts, although, in different stages of the process, pigmentation and fibrosis may be more marked in some areas than in others and the deposit is greatly modified by pre-existing or subsequent infectious processes.

A point of importance which I wish to emphasize in regard to the rapidit and extent of formation of fibrous connective tissue is the character of the inhaled carbon particle. Much the greater part of the experimental work done on anthracosis has been carried on by using a chemical dye as the irritant, and to a large extent the observations of different writers on the relationship of anthracosis and lung disease has been centered on the question of smoke and soot as irritants. Smoke and soot, possessing as they do considerable chemical irritants as the result of combustion of coal, cannot be classed as the type of irritant which will produce the resultant fibrous tissue with a minimum amount of irritation. On the other hand a finely powered carbonaceous particulate matter, unaltered by combustion, while not possessing chemical properties in the combination necessary to produce irritation may possess physical properties sufficient to bring about a greater reaction on the part of the tissue cells. Thus, in the industries, notably coal mining we meet with extreme fibrosis while in city dwellers there is often distinct pigmentation but relatively little fibrotic change. The fine particles which go to make up smoke and soot are of a soft spongy nature physically capable of irritating but little, while a carbon particle of coarser texture, hard or brittle and possessing everywhere tiny sharp edges will act as a more high grade irritant.

There is a marked similarity in the formation of development and end results of a typical tubercle in the lung and the histological changes caused by the inhalation of smoke and soot, in contradistinction to the end results as seen when a particulate matter of coarser texture is inhaled. When the tubercle bacillus enteres the lung there is almost immediately a proliferation of the endothelial lymphocytes, which proceed by their own ameboid motion into the alveolus, take up the bacillus and then migrate with their prey into the small lymph channels where they form small cell nests which may partially or wholly occlude a small channel. The cell nest or typical tubercle is avascular, and the next step in the process is a breaking down of the tubercle, or its caseation. Surrounding the whole nest may be present a more or less amount of newly formed connective tissue which denotes an attempt to encapsulate the lesion. The process described above is identical with the reaction due to the inhalation of smoke and soot, without, of course, the usual necrosis as seen in tuberculosis. Now, with an irritant of coarser texture the reaction goes still further. Due to the higher grade irritation, as the result of the fine sharp edges, the counter-reaction is more high grade and instead of lying dormant or going on to prolonged caseation, connective tissue is formed in abundance, which encapsulates, fills in and completely replaces the area.

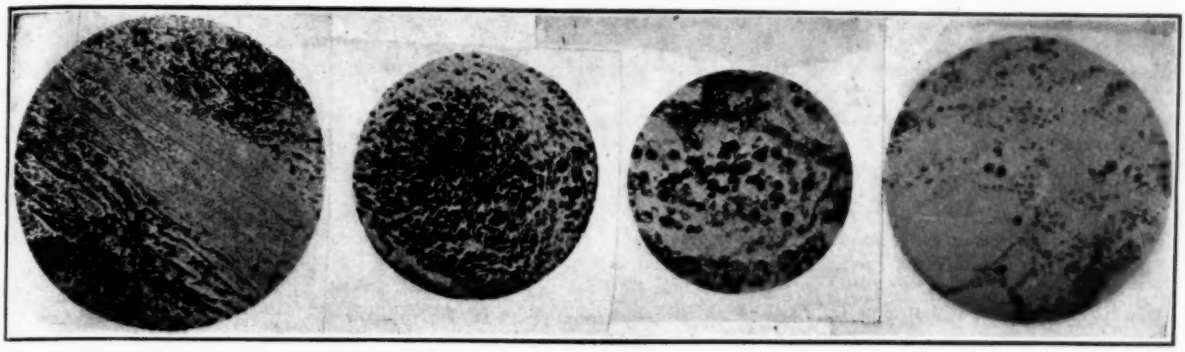
Herein, then, lies the important difference between the three classes of irritants. First, the tubercle bacillus calls forth a slow, feeble reaction, allowing of necrosis and dissolution of tissue. Second, smoke and soot, also call, to a degree, for a low grade reaction with a slight amount of fibrous tissue formation; while third, a coarser carbon particle as found in the industries, brings forth a high grade irritation with the production of abundance of new formed fibrous tissue. This new scar tissue forms without the production of an inflammatory exudate. In other words, the amount of connective tissue resulting will depend not only upon the amount and length of time of irritation but more particularly upon the chemical and physical type of the irritant, as is seen in the different extent of occupational and resident anthracosis. One which produces the least destruction of tissue, either through its liberation of toxin or by virtue of its contained chemical constituents or the absence of the same, is of course the least harmful as is illustrated by the mortality tables which show the death rate per thousand from lung disease in coal miners and other laborers.

From these statistics it is apparent that the death rate from tuberculosis among coal miners is low and that it is relatively high in workers in soot, which fact would tend to show that abundant connective tissue which does exist in miners' lungs, due to the inhalation of coarser particulate matter unchanged by combustion, acts as a resisting force against the extensive ravages of tuberculosis. The end result of foreign body in the lung is fibrosis of variable degree and distribution, with a resultant histological modification of the structural tissues which must tend to affect favorably or unfavorably the course of pulmonary disease. That a moderate degree of anthracosis is not detrimental to health must be conceded, for in our every day life, especially in cities and industrial centers, we are constantly inhaling dust laden air and must therefore develop to some degree pigmentation or fibrosis in our lungs.

Many investigations on the smoke question have been made, notably the exhaustive study by the Mellon Institute of Industrial Research and School of Specific Industry of the University of Pittsburgh, and it has been shown that anthracosis does have a direct effect on pulmonary disease. For its influence on lung affections we must divide pulmonary disease into two classes, acute and chronic, and we must further note the effect of fibrosis on each separately. The acute type of lung disease is represented by pneumonia, which will be discussed first; while the chronic type is represented by tuberculosis, a discussion of which will follow.

In pneumonia the process is one of acute inflammation within the alveoli and smaller bronchi, with the production of a fibro-purulent exudate. Ordinarily this exudate remains in the structures from five to seven days and then undergoes resolution. The process of resolution consists first in a softening and liquifaction of the exudate, and second in getting rid of the sesultant debris. Part of the exudate is coughed up and expectorated, but by far the greater part of it passes back into the circulation by way of the lymphatics and thence through the lymph nodes. It is evident, then, that for the removal of this debris patulous lymph channels must be present, and it is likewise obvious that anything tending to block or impede the passage of this debris must interfere with the healing process. This condition is exactly what exists in cases of pneumonia superimposed upon fibrosis or anthracosis of the lung, as is evidenced not only in the postmortem examinations but also by the mortality statistics gathered from smoky industrial districts.

One of the fundamental principles in repair of tissue is drainage. Here we have the main avenue of drainage, the lymphatics, partially or wholly interfered with by



No. 2.—Pigment phagocytes in alveola and inter-alveolar lymphspaces.—*Haythorn.*

No. 1.—Alveolus containing pigment phagocytes with alveolar epithelium intact.—*Haythorn.*

No. 4.—Pigment bearing cells actively forming the tubercle.—*Haythorn.*

No. 3.—Perivascular lymphspaces completely obliterated by carbon pigment and fibrosis.—*Haythorn.*

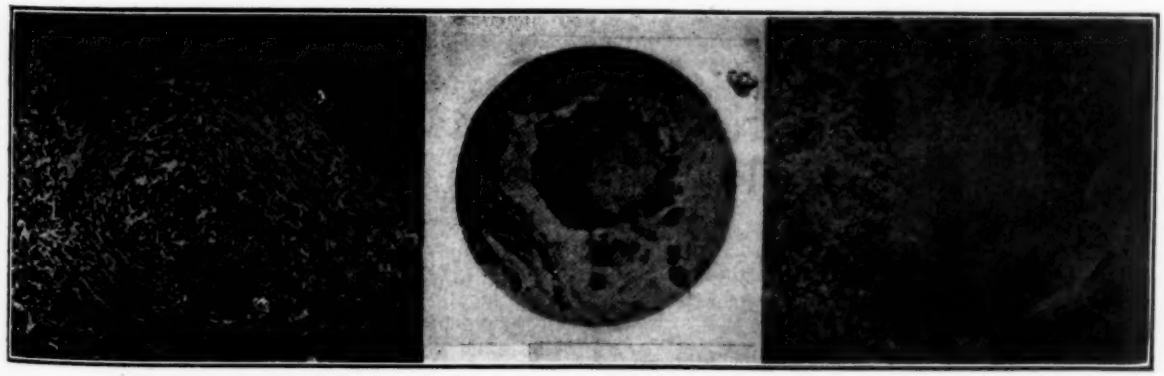
the contraction of fibrous tissue. Naturally this allays the drainage of the debris, favors the greater absorption of septic toxins and mechanically interferes with resolution. Statistics show that the mortality is high from pneumonia in industrial centers as compared with other districts and is on the increase from year to year as industry expands. The city of Pittsburgh has one of the highest death rates from pneumonia of any large American city and this rate has greatly increased in the last three decades.

Taking up pulmonary tuberculosis as representing the chronic granulomatous type of lung disease, we find a very different association of fibrosis and the course of the disease. Primarily tuberculosis is a minute local lesion of a blood or lymph channel which shows no tendency to rapid progress or extension. Its own efforts toward further distribution is almost nil, and were it not for the motile phagocytic cells carrying it along the patulous lymph channels it would remain localized indefinitely at its initial point of entrance. With patulous lymph channels there is no barrier to obstruct its progress, and as a result the infection is carried centrally, past nodal points, through lymph nodes situated along the route, everywhere leaving or depositing infection until the terminal lymph nodes at the hilus are reached.

hand it is obvious that anything tending to impede or obstruct the process will tend to minimize the extension and favor localization of the infection. This is the condition that exists in the pathological findings at autopsy and is also shown in the mortality statistics gathered from districts and industries where anthracosis exists abundantly. The death rate from tuberculosis is low in the city of Pittsburgh as compared with other large American cities and during the last three decades has declined over one hundred per cent. In tuberculosis or other granulomatous conditions where the reaction is focal, anthracosis acts as an additional stimulus to the tissues, with a resultant connective tissue formation, encapsulation and localization.

Locally, tuberculosis extends by continuity and by contiguity of tissue, beginning with a minute miliary tubercle and passing through the different stages as previously described. Cavity formation is brought about by confluence and caseation of a number of tubercles. Healthy connective tissue furnishes an impassable barrier to local extension.

In the presence of chronic irritation of specific tissue there is called forth hypertrophy, hyperplasia and migration of the reserve cells, which react in a definite manner, with a certain sequence characteristic of the behavior of living cells throughout nature. These changes in the



No. 7.—Distribution of carbon pigment in the periphery of tubercle.—*Haythorn.*

No. 6.—Arrangement of pigment in giant cells.—*Haythorn.*

No. 5.—Early tubercles containing pigment bearing cells.—*Haythorn.*

At different points along the lymphatic channel there arises the characteristic cell nest, or tubercle, and as the process progresses these tubercles caseate, coalese and form conglomerate tubercle or in other words the typical tuberculous lesion—consumption. If it is true that the tuberculous infection is disseminated primarily in this manner through the lymph channels, then on the other

cells may be interpreted as hyperactivity against antagonistic things or forces, increase of mass action against such antagonists, and attempt at change of environment, all of which are defensive reactions and constitute the essential means of self preservation.

Nature provides for the regeneration of tissue in two ways, the direct and indirect. The former consists in the

division of specific cells, and the latter in the division of reserve cells whch are set aside for the regeneration of tissue by the process of multiplication, specialization, and differentation. Direct regeneration occurs in the reproduction of endothelial cells only. Indirect regeneration occurs in such specific tissues as are represented by squamous cells of the skin, secretory cells of the glands of the skin, blood corpuscles, fibrous connective tissue and others. Whether the attempt at regeneration will be direct or indirect depends upon the character of the irritant. Direct regeneration of tissue represents the most primitive form of reproduction and is stimulated primarily by destruction of tissue. Is not this attempt at reproduction seen beautifully in the make-up of a typical tubercle, with its abundance of endothelial cells and its scanty supply or even absence of connective tissue cells? Reserve cells of endothelial tissue have never been seen, and we cannot look for the power of specialization and differentiation in these primitive cells.

Thus, in tuberculosis we have a slow, destructive change going on in the tissue cells, with this feeble reaction on the part of the endothelial cells which possess no power of reproduction of tissue capable of coping with the destructive action of the tubercle bacillus and so can do naught but die. The more virulent or destructive the irritant, the less the attempt at indirect regeneration will be. On the other hand, numerous cases of tuberculosis go on to chronicity, with extensive fibroid changes and healing, because of the low virulence of the organism and minimum destruction. Where no destruction of tissue occurs, as is true with the inhalation of carbon particles, the reaction to regeneration of tissue is always by the indirect method, the calling forth of reserve connective tissue cells set aside purposely by the human organism for just such an emergency.

Fibrosis of the lungs from the inhalation of carbon irritants can be distinctly harmful only when produced to such a degree that contraction of the bronchioles and surrounding tissue occurs, diminishing the gaseous exchange by lessening the breathing surface, thus tending to bronchitis and dyspnea. We can also see how empysema may occur by the diminished function of certain parts of the lung, due to fibrosis and the demand for increased function of the other parts, leading to abnormal distention of the pulmonary alveoli. It is very obvious also, from health and mortality statistics and from pathological findings, that fibrosis is not without use in protecting against pulmonary tuberculosis, for is not the connective tissue placed in exactly the areas where tuberculosis would attack?

The living conditions and housing in some of our industries, more especially in coal mining districts is deplorable. The employes work long hours at hard work under ground with not the best air available, yet in how few of these lungs do we find active tuberculosis? There must be some agent at work protecting these particular lungs. The condition known as anthracosis with its accompanying fibrosis, I firmly believe, is responsible for this protection.

Permit me to quote Dr. William Charles White, Chairman of the Research Committee of the National Tuberculosis Association: "All investigators whose opinions are based on grounds other than theory, are agreed that smoke has a tremendous influence on increasing the incidence. Severity and mortality of acute diseases of the air passages. It would appear that the increased susceptibility is in part the result of the lowering of our natural body resistance. In simple terms, the smokier the atmosphere the more colds and bronchitis and the more money paid to doctors. On the other hand, the relation of smoke to tuberculosis is one of greatly divided opinion and the burden of proof is that if smoke has any influence at all it is not a harmful one. If this be the truth and tuberculosis is not influenced by smoky atmosphere, it is time to stop the utterance of this popular fallacy which can do naught other than harm in sacrificing the confidence of the public in those who should guide them."

After prolonged observation in smoky districts and mining regions I believe I may rightly conclude as follows:

Anthracosis increases the incidence, severity and mortality from pneumonia.

Anthracosis decreases the incidence, severity and mortality from tuberculosis.

The untoward effect of preexistent anthracosis on pneumonia is vastly outweighed by the salutary effect on both the incidence and course of pulmonary tuberculosis.

St. Joseph's Hospital, E. 143rd St. and Brook Ave.

ANTHROPOLOGICAL MEASUREMENTS AND PHYSICAL EXAMINATIONS OF MEMBERS OF CONGRESS

DR. ARTHUR MACDONALD,
Washington, D. C.
AUTHOR OF "MAN AND ABNORMAL MAN"

The general object of measuring senators and representatives is to find the anthropological status of American statesmen in their prime. Only those measurements are taken which anthropologists regard as fundamental for all races and all classes of people, as height, weight, sitting height, arm reach, width, length and height of head, etc.

In addition to these measurements, some of the leading medical specialists of this city have consented to give gratis, but for scientific reasons to each member measured: first, a physical examination; second, a neurological examination, and third, a blood examination, each by a different group of specialists. Every specialist must sign his report of the results of his examination in each case. Each member of congress can see and copy the reports of his own case. It is unnecessary to say, that these reports are strictly confidential, and under no conditions will the name of any member be mentioned in connection with either the anthropological measurements or with the three specialistic examinations. Moreover science has no use whatever for personal names.

While the measurements and examinations are wholly voluntary, each for itself, and one not involving the other, I trust that all members of Congress will avail themselves of each of these examinations, and suggest the earlier the better, as delay might inconvenience some of the specialists. I hope that every member will at least consent to take the anthropological measurements, when I call at his office. This may require from ten to twenty minutes. We are making a measuring rod for the normal to distinguish it from the abnormal. The abnormal has little meaning, unless we know the normal.

The anthropological measurements, though preliminary to the other examinations, are nevertheless of fundamental importance by themselves alone; they are the foundation upon which the physical, neurological and blood examinations can build, by comparison worked out through mathematical correlations.

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The Tubercle Bacillus and Pulmonary Tuberculosis

WILLIAM DEUTSCH, Ph.D.

New York

The phenomena of disease have long been, as even the most ancient records show, the object of speculation and careful study. Many of these phenomena commonly associated together have also been regarded as being due to a single cause and the condition in which they appear as a definite disease.

In studying a disease there is always the danger of ascribing to an organism present in the body of the patient a causal relation to the disease. Certain requirements must be met to provide adequate proof of such a relation. Such requirements were first formulated by Henle, who realized that no micro-organism had been, before that, really proved responsible for a disease.

Later, Koch restated these requirements in improved form and was the first to be able to comply with them in regard to a bacterial disease by proving the tubercle bacillus responsible for all forms of tuberculosis. These are Koch's Postulates:

1. The organism must always be present in all cases of that disease.
2. The organism must be isolated in pure culture from the diseased material.
3. This pure culture must cause that disease when injected into a suitable animal.
4. The organism must be found in the diseased animal and isolated again in pure culture.

Although it may not be possible to conform to all the above requirements in regard to a disease and still the organism is considered the probable cause, it has been shown more and more that it is wiser never to consider it definitely proved until the requirements have been satisfied.

Although Koch is generally credited with the discovery of the cause of tuberculosis, this idea is due to the fact that he was able to prove the responsibility of the tubercle bacillus. But before 1882, which was the time he was doing most of this work of isolating and cultivating the bacilli, we find Klencke, in 1843, as the first one to succeed in transmitting the disease by means of tuberculous material. Villemin accomplished this more elaborately and carefully in 1865. Baumgarten had also seen the bacilli in tissue sections and had made morphological observations regarding them, before the work of Koch was published. However, he contributed nothing but this to the subject which even Koch with all his work, left vague and unexplored, except in spots. Tuberculosis is, even today, a puzzling field for the investigator.

A system is easily constructed if all the facts pertaining to it can be proved. A chemist, for example, is in a position to do this in connection with his work, since he has to reckon only with the chemical and physical nature of a substance, while the bacteriologist must consider the physiological, physiochemical and histological characteristics of the organism he is studying. For that very reason he encounters obstacles, for the final result can never be foretold with any degree of certainty. Every single factor plays a very important part in the development of an organism. We know that unfavorable conditions can be responsible for amazing changes in bacteria. Many modifications can be produced in them by culturing in different media. Thus with tubercle bacilli.

The tubercle bacilli are slender rods, sometimes slightly bent, about 0.4u wide and from 2.0 to 4.0u long. They contain refractile granules and are enveloped in a fatty or waxy capsule which is apparently protective. Branching forms sometimes occur in cultures, suggesting a close relation to actinomyces and strepthothrix.

In sputum they frequently occur in small clumps, often with many bacilli lying parallel and a few across, at an angle. They may sometimes be slightly irregular in outline and then are found to stain deeply in spots and less so between these spots, producing a beaded appearance. This may even cause them to appear like chains of cocci.

Hans Much describes as living particles of tubercle bacilli, certain granules which are found in old caseous foci or occasionally in the pus of cold abcesses which contain no tubercle bacilli shown by acid-fast staining. They are Gram-positive and nonacid-fact and in that condition, do not multiply They may become acid-fast. Guinea pigs, Much claims, when inoculated with material containing Much granules, die quickly of tuberculosis. Much concludes that these granules develop into typical bacilli when environmental conditions are optimum. The nature and significance of these Much granules is still uncertain but it is doubtful if they are identical with Spengler's splinters.

The determination of the chemical composition of bacteria is of importance, first, from the medical standpoint, inasmuch as this can supply an explanation of the conditions under which these organisms affect the lives of higher organic forms. It can give, especially, a knowledge of the requirements for life and growth of the bacteria themselves, the nature of the poison they produce and the antibodies they cause the body to produce.

It is also important for the physiological study of bacteria to have this chemical knowledge, for when the physiological functions of one group differ strikingly from those of another, such investigation of these groups merits great attention, since a thorough knowledge of the chemical composition can change, or at least improve the fundamental understanding of both.

So far, chemical study of the tubercle bacilli has yielded only very superficial facts. They contain 83-89 per cent moisture; when dry, inorganic salts to the amount of 1.3 per cent, about 1.2 per cent of phosphoric acid and when dry, 10-20 per cent of a waxy constituent. The poison of the bacilli is undissolved in the cell body.

They are aërobic, nonmotile and do not form true spores. The optimum temperature is 37 deg.-38 deg. C., but they can grow from 29 deg.-42 deg. C. They are not killed when exposed to moist heat of 50 deg. C. for less than twelve hours, but 55 deg. C. for four to six hours destroys them. Moist heat of 60 deg. C. for a half hour or fifteen minutes at 70 deg. C., five minutes at 80 deg.-90 deg. C. or one minute at 95 deg. C. all serve to kill the bacilli. However, they are more resistant in milk or sputum, which serve as protection; being able to resist, in milk, a temperature of 60 deg. C. for an hour, when the milk is open to the air. This is because the milk, under such conditions, forms a pellicle on its surface which protects the bacilli directly under it.

In sputum the mucus protects them and they have been known to retain their virulence for six to eight

months in dried sputum in a cool, dark place. Even in dried sputum, however, direct sunlight for a very short time, or five minutes boiling, will kill them.

Staining is generally considered from the viewpoint of what it makes conspicuous, rather than why, but the second is much more important in relation to theoretic knowledge. The behavior of bacteria to stain is determined, it is reasonable to assume, by the characteristics of the protein composing the organism. This substance is probably an ampholyte, which combines with acid dyes on the acid side of its isoelectric point and with basic dyes on the alkaline side.

The Gram reaction probably depends on similar conditions, being determined, as many maintain, by the lipoid content of the cell membrane and especially by the unsaturated fatty acids, phosphatids, etc. Bacterial protein must, therefore, be a conjugate protein and not a pure simple one. In a solution whose reaction is on the acid side of the isoelectric points of both protein and phosphatid, i.e., a very acid solution, both of them tend to combine with acid dyes.

It is the waxy capsule that causes the tubercle bacillus to have the characteristics of acid-proof staining, for bacilli from which this has been removed by extraction are not acid-fast, while the wax itself then shows this peculiarity. It has been also found that bacilli from young cultures are less acid-fast than those from old cultures, which contain, upon analysis, a greater percentage of the waxy constituent.

Before staining it is advisable to use the antiformin method of separating the tubercle bacilli from the others. Sputum untreated in this way may often appear to contain no tubercle bacilli, since the masses of sputum hide the bacilli. The effectiveness of this method depends on the fact that tubercle bacilli are the only ones to survive this treatment.

The method is carried out as follows:

Put sputum, diluted if necessary, into a conical tube, add one quarter the volume of antiformin and stir thoroughly until the mass is homogeneous. Add an equal volume of 85 per cent to 98 per cent alcohol, stir until all the mucus is dissolved, let stand twenty-four hours, wash sediment, smear, stain and examine.

There are many methods of staining tubercle bacilli, among which I have found the Ziehl-Neelsen method to be particularly good, but I have always obtained the best results with Spengler's method. The directions are:

1. Stain with carbol-fuchsin, gently steaming for three to five minutes.
2. Pour off the carbol-fuchsin and apply picric-acid alcohol for two or three seconds. Picric-acid alcohol is prepared by dissolving 2 gm. picric acid in 40 cc. distilled water, allowing this to stand twenty-four hours, filtering and adding an equal volume of 96 per cent alcohol.
3. Apply three or four drops of 15 per cent nitric acid for five seconds.
4. Pour off the nitric acid and apply picric-acid alcohol again until sputum looks yellowish.
5. Wash in water, counterstain if desired, dry, mount.

The field of the isolation and cultivation of the bacilli is a complicated one. The first cultures were made by Koch on coagulated blood serum from bits of tuberculous tissue smeared over its surface.

In 1902 Drigalski and Conradi discovered that crystal violet was able to inhibit the growth of many bacteria but had no effect on the cultivation of typhoid and colon bacilli. Churchman, in 1912, found that by making divided plates, one half filled with plain nutrient agar and the other with agar plus 0.001 per cent gentian violet and stroking the surface with a mixed culture, he could get, in the gentian violet agar, the tubercle bacillus alone, thus purifying from bacillus subtilis.

Petroff's medium (1915) though simple and reliable did not have enough moisture and therefore required inspissation, which frequently resulted in an uneven surface in spite of all precautions. A good medium is egg white and egg yolk solution and meat infusion.

Parasitism itself is made possible by adaptation, but in this state there are exhibited all degrees of adaptation. The most perfect adaptation is of course shown by those micro-organisms which do not injure the host, as it is naturally more beneficial to the parasite to retain a favorable environment by keeping its host alive. For this condition to occur, it is usually necessary that the parasite shall either grow very slowly or be able to dispose somehow of the surplus number, resulting from its multiplication, over what the host can readily support, such as passing out of the host in some manner. If this is not provided for the host would die. This state is approached by the tubercle bacilli.

Culture filtrates exert little or no effect when inoculated into normal animals. But the dead bacilli cause local inflammations, limited lesions and stimulate the formation of typical tubercles at the point where they lodge. Obviously the tissue cells or body fluids act on them to set free the poison from some substance in the dead cells and Old Tuberculin, bacteria-free culture fluid, is certainly made toxic in this way. Bacilli can be demonstrated in smears from these lesions and the inoculation is considered positive. Material from these lesions will not, however, cause disease in another animal. Prudden and Hodenpyl long since demonstrated this capacity of dead bacilli to cause macroscopic lesions.

The poisons produced by the tubercle bacilli have a characteristic effect on the tissues. The cells surrounding the bacilli, either living or dead, soon begin to indicate the action upon them of some irritant. The cells of the connective tissue swell and undergo mitotic division, producing large cells with pale nuclei, thus forming a small focus of proliferated epitheloid cells about the bacilli. This focus itself is surrounded by lymphoid cells, their number depending on the intensity of inflammation.

The lesions progress, if the bacilli are alive and increasing in number, in the production of a cheesy mass by the degeneration of the central cells. The further decay of this mass may lead to the formation of cavities.

The formation of small nodules, named military tubercles, are characteristic, therefore, of the effect of the poison of the tubercle bacilli. These are, before degeneration, hard, slightly smaller than a millet seed and of a translucent gray color. Beside these miliary tubercles, the bacilli may cause diffuse growth of the same sort of tissue as is found in the nodules, containing then, epithelioid, giant and lymphoid cells. Just as in the tubercles, this diffuse tuberculous tissue tends to undergo cheesy degeneration.

An explanation has been found by Carl Weigert covering the morbid activity described above, as well as that of other diseases and also many normal phenomena of the healthy body. Under normal conditions each cell of the human body is subject to the stimulation of the other cells it is closely associated with and of the body fluids with which it is bathed. One of the effects of this seems to be a restraint of the proliferative activity of the cell. The destruction of some of these cells or of certain parts of them serves to remove this restraint and thus allows the formation of new cells or of new replacing parts, generally to a great enough extent to more than make up the loss. This is also an explanation of tissue hyperplasia and repair after exercise or local tissue destruction.

A further explanation may be obtained from an observation of what occurs to a foreign particle introduced into the body. The mere physical mass of the parasite exerts the same effect as any foreign particle and becomes surrounded by tissue elements. If it is minute, it is ingested by phagocytes, as first seen by Metchnikoff If larger, it is surrounded by proliferated connective tissue cells, which then contract into a firm capsule. The foreign substance or the parasite if soluble may be dissolved by parenteral digestion, the enzymes being produced by the tissue. If insoluble, the parasite may remain encapsulated or may be, when minute enough, transported quite a distance in wandering cells and finally deposited in a lymph gland. The dead body of the micro-organism or an entirely passive parasite may therefore be digested, ingested by cells or encapsulated in fibrous tissue.

The end of the battle being waged against tuberculosis is still far distant. The open-air rest cure, light, air and proper nourishment are still the main factors in the treatment. It is true that the exhausted body is rested in this way and the patient gathers energy for the struggle against the disease. The physical condition is in many cases, bettered, but such a cure is not lasting. The complexion soon becomes pale, weight is lost and the symptoms again appear. One would need a specific therapy to combine with hygienic measures. Especially is this the case with pulmonary tuberculosis, for what the patient gains in energy is lost because of the disease. Were it only possible to find a specific therapy which could result in clinical improvement, the rest cure could then be employed as auxiliary treatment.

There is a theory accepted by some authorities that immunity to tuberculosis depends on the presence of a tuberculous lesion and that when the lesion is healed the immunity disappears. According to that, then, the reason why non-virulent or dead bacilli or their products may be of value in giving immunity is that they produce tuberculous lesions and the degree to which they are of value depends on the extent of this result.

Most people become infected with tuberculosis in childhood and most of these infections remain latent. As long as general resistance is good and they remain in this condition, the person has a certain amount of immunity, but if ever this immunity is weakened by some unfavorable change, as lowering of the general resistance by a disease, of more or less severity, even a severe cold, fatigue, worry, or something of the sort, dissemination takes place and the infection may then progress, or else, with the recovery of the general resistance, regress and the immunity be regained.

The beneficial results of tuberculin, when carefully used as a therapeutic agent, are difficult to account for. The injection of this material, it is generally admitted, does not cause the body to produce antibodies hostile to the tubercle bacillus, but rather a tolerance to tuberculin, either reducing or causing loss of sensitivity to it. It might seem a dangerous result, laying open the body to superinfection, were it not that the symptoms of tuberculosis are due to the action of tissues hypersensitized in this respect. Therefore, if the injection of tuberculin can reduce this hypersensitiveness, it should cause clinical improvement and, as a matter of fact, generally does accomplish this. If, however, the tuberculin is administered in large doses, regardless of reaction, this sensitiveness is entirely destroyed instead of being merely reduced and the danger of superinfection may actually result.

Numberless methods have been attempted to get the true products of the tubercle bacillus, with which to stimulate the animal body to produce antitoxins and bactericides. However, it is generally admitted that none of the substances so far made public have practical value to any degree.

Active immunization has been tried with the following types of preparation:

1. Tuberculins.
2. Vaccines.
   a. Killed cultures.
   b. Soluble vaccines.
3. Living tubercle bacilli.
   a. Virulent organisms (Webb method).
   b. Attenuated viruses.
   c. Alien acid-fast bacteria.
4. Sera.

It is well known that attenuation in respect to tubercle bacilli depends on the fact that the bacilli gradually decrease in virulence when subjected to deleterious influences. Some strains lose their virulence after varying periods of artificial cultivation.

Of the preparations experimented with in the hope of producing active immunity, the majority are tuberculins. The original old Koch tuberculin was an unconcentrated glycerin bouillon culture of tubercle bacilli. After he improved it, it was called Koch Old Tuberculin and consisted of the concentrated filtrate from a bouillon culture.

The various modern tuberculins are the Spengler vacuum tuberculin, which is a glycerin bouillon culture of the tubercle bacilli concentrated in vacuo at low temperature; the Beranek tuberculin, a bouillon filtrate of the bacilli and their extract; the Calmette tuberculin, a culture fluid of the bacilli and their extract; the Landmann tuberculin, a material extracted from the bacilli with slowly rising temperature; the Rosenbach tuberculin, made from a culture of the bacilli from which the poison had been removed by a trychophyton; New tuberculin I. In glycerin, insoluble material from bacilli. 2. In glycerin, soluble material from bacilli. 3. New tuberculin bacillus emulsion, material from mechanically ground up tubercle bacilli.

There are also: Mixed tuberculin (Wolf-Eisner), consisting of a combination of old and new tuberculin; Old Koch bovine tuberculin, condensed bouillon filtrate of bovine tubercle bacilli; original old bovine tuberculin (Spengler), unconcentrated but filtered culture fluid of the bacilli; and Bovine bacilli emulsion, material from mechanically ground up bovine bacilli. Other substances are Maragliano's Serum, Marmorek's Serum and Dostal's Tebecin. There are, of course, many others.

Of them all, the only one that can possibly be considered is Webb's method of inducing artificial active immunity in experimental animals by injecting virulent bacilli, beginning with one or two organisms and gradually increasing the number. His results, though few in number, seem worthy.

The aim has been in every case where an improvement on tuberculin was sought, to eliminate the useless and dangerous portions of tuberculin as originaly prepared. There are two directions different bacteriologists have taken to reach this goal; on the one hand, mechanical and chemical methods; on the other hand, biological methods.

Marmorek succeeded in so greatly changing the tubercle bacillus, by culturing (leucotoxic serum), that it was no longer the tubercle bacillus. He called this the "Primitive Bacillus". He also made researches on horses and succeeded, in many cases, in immunizing them against various forms of tuberculosis, though not against tuberculosis of the lungs.

Dostal succeeded, by mechanical methods, in almost entirely freeing the bacillus from the capsule and cultivating it in that form. It was, then, nonacid-fast.

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The Physician's Month in the Courts

ARTHUR M. HARRIS
Seattle, Wash.

One of the things which are of interest to physicians in connection with our courts of law, is that those courts are always engaged in defining the limits and explaining the functions of what is called commonly expert testimony, the testimony, that is, that any physician specially experienced in a given method of practice may at any time find himself subpoenaed to give from the witness stand.

An important aspect of this subject comes to us this month from the state of Missouri and is well worth more than a moment's glance because it shows the court checking abruptly a development of expert testimony which, if unchecked, would make the entire practice of medicine extremely dangerous from the point of view of litigation.

The court in this case puts a stout shield of protion over the profession generally. The Missouri court holds, in effect, that expert testimony may not be used to create an evidential fact which in itself is not actually the case. This will not be so vague as it sounds when we glance at the facts of this litigation.

A child, some four years old, developed a cyst—or pimple as it was sometimes called during the trial—on his upper eyelid. According to the court's narration of the facts, the parents consulted a physician and he, in company with a consulting physician, went to the patient's house and there performed what was said to be an "easy" or minor operation for the removal of the cyst. After the operation the eye was bandaged and the parents were informed by the physicians to bring the child to them from time to time for further observation.

The parents testified that thereafter they slept with the child between them, each parent holding one of he child's hands, so that the bandage would not be tampered with nor the child put its fingers in the wound. In the subsequent months the eye became covered with a sort of film and it seems that, very oddly, the upper eyelid upon which the operation had been effected made some sort of contact with the eyeball and the two grew together. Another physician was thereupon consulted who testified that he found the eyeball shrunken and the lid adherent to it, that apparently there had been a rupture in the lid and the ball so that the two subsequently grew together; the vision of the eye in question was permanently destroyed.

The parents sued the operating physician in the sum of $30,000, as damages for the alleged negligent removal of the cyst and the subsequent treatment of the wound. Before the trial, the defendant physician died and his widow, being administratrix of his estate, was substituted as the party defendant. The trial resulted in the nonsuit of the plainiffs (the parents of the child) and they appealed to the state supreme court.

Now, when the smoke of the battle cleared somewhat, the fundamental question in the case was seen to be this: Did the physician, in operating upon the eyelid, negligently cut the eyeball? The theory was that such a cut must have been made thus causing the unfortunate conditions complained of.

The father testified that he was present during the entire operation save for three or four minutes when at the physicians' request he went into another room to obtain a towel. He said that the operator used a "sharp knife" and that the operator's hands "shook very much" while working. He did not, however, positively testify that he saw the eyeball cut. That was all the testimony as to that aspect of the case—the fundamental fact of the case—which was before the jury. As it stood, it was simply a question whether the jury would be allowed to infer from the fact of a sharp knife and a shaking hand that the eyeball was cut.

This was not too strong a position for the plaintiffs, so it seems that various physicians were called by them who, after qualifying themselves to testify by a recital of their professional education and experience, particularly as regards the eye, were asked by counsel for the plaintiffs, in effect that is, whether the condition of the eyeball must necessarily have been caused by a cuting of the eyeball.

One can easily see the point. The idea was to draw from this expert testimony a rigid inference which would amount in substance to the creation of an actual evidential fact by this expert testimony. Here was a certain condition of the eyeball and the eyelid; no one actually saw the eyeball cut, but that condition could have been caused only and solely by the act of cutting the eyeball; therefore, the operating physician cut the eyeball and was guilty of negligence.

But it was shown that such an injury could be caused by a blunt as well as a sharp instrument and might possibly also result from infection. What did the supreme court say, then, in considering the whole matter? This: "We are of the opinion that whereas the record here shows that the adhesion of the eyelid to the eyeball and the scar on the lid was shown to be eight months after the operation had been performed on the lid, no expert could with any degree of certainty, or even probability, say that it was caused by a sharp-pointed knife, a blunt instrument or deep seated infection, any one of which all the evidence shows could have caused it."

The court is not going to allow an inference from expert testimony to be used for, and have the value of, an evidential fact. Then, in affirming the judgment of the trial court in nonsuiting the plaintiffs, the court states this general rule which I think you will be interested to remember:

"All expert testimony must be predicated upon facts or conditions conceded to be true or existing or assumed to be established by other testimony and that necessarily excludes the possibility of basing one opinion upon another opinion. In this case there was no proof of any sort that there was a cut of the eyeball by the defendant. This fact could not properly be proved by an opinion. To assume it without any proof as to the producing cause of the condition found would be to have the expert find the facts and decide the case on guess work. . . . In order for the plaintiffs to prevail, on the theory of their counsel, it would have to be inferred that the scar found upon the eyeball was caused by a cut and the further inference that the defendant physician caused the cut and still further that the cut caused the loss of the eye. This cannot be done."

Is not that a fine statement of a fine rule of the law of evidence?

* * * *

Tennessee has just ruled that a non-resident dentist is not qualified to obtain a license to practice his profession in that state. Although this is a

dental case, I call it to the attention of readers of the MEDICAL TIMES because the underlying law and logic will apply also to the medical profession generally and probably is applicable in most of the states as well as in Tennessee.

The applicant, it seems, was a resident of Georgia, where he maintained dental "parlors" in which he employed licensed dentists. Apparently he wished to open a "branch parlor" in Tennessee. To do this, he first sought to be licensed in the latter state himself, but this, as we have seen, he was refused, the court holding that as a non-resident he could not be granted a permanent license to practice.

"The act," the court says, "in effect prohibits the modern tendency to commercialize the profession (of dentistry) and is directed at the very thing the applicant is trying to do, viz: have local dentists practice their profession in his name."

The medical profession should gratefully realize that in the courts of the country generally it has strong allies for the upholding of ethical ideals and methods.

* * * *

The Supreme Court of Errors of Connecticut has just handed down some interesting definitions of the admission to medical practice in that state, wherein the same spirit of regard for the highest requirements of the profession is manifested.

A physician's certificate of registration was sought to be revoked in that state on the ground that it had been obtained by fraud. Under the laws of Connecticut the societies representing the various medical "schools" are permitted to examine and recommend applicants who wish to pursue their particular methods of practice. In this case the applicant was examined and recommended by the eclectic examining board.

Later, on request of one of the prosecuting officers of the state, the board of health and the eclectic board recommend the revocation of this applicant's certificate. He appealed to the courts. There the authority of the eclectic board is discussed and the main point was established that it could recommend the revocation of a certificate of registration without first being compelled to give the certificate holder a hearing, the court ruling that a hearing in the courts on appeal from a ruling of the board sufficiently protected his rights.

By the way, any physician interested in some aspects of the preparation of medical students should read the referee's report embodied in this case. If one cares to ask any law librarian in his vicinity to see the case of Brein v. Connecticut Eclectic Examining Board, it will be found in 130 Atlantic Reporter, at page 289, and the reader will peruse a rather startling report.

The Dietetic Treatment of Chronic Constipation

EDWARD E. CORNWALL, M.D., F.A.C.P.,
Brooklyn, N. Y.

The alimentary tract consists of a tube extending through the body with its appendages. The purpose of this tube is to supply a sheltered place in which food can be prepared for absorption, and a suitable area of body surface for its absorption after it has been suitably prepared. As an apparatus, the alimentary tract shows two outstanding functions, a motor and a chemical function. The motor function mixes the food with the digestive juices and facilitates its absorption, carries it along to the different parts of the tube where the successive processes of its preparation and absorption take place, and finally expels its unabsorbed remnant. This function exhibits itself in the operation of segmentation, which mixes the bowel contents with the digestive juices and facilitates their absorption, and the operation of peristalsis, which shoves them along through the tube. The chemical function is occupied with the secretion of the agents required in digestion.

It is interesting to compare the manner of our absorption of food with that of our unicellular ancestors. Our individual cells, our biological units, are what actually feed, and not the aggregation of complicated apparatuses and organs made up of these cells, variously differentiated, which we call our body. The food finally comes direct to these ultimate cells after being taken successively from intermediate feeding troughs, so to speak: from the alimentary tube, from the blood stream, and finally from the intercellular lymph—floating in the last, the individual cells of our body absorb their nutriment in the same manner as did their unicellular ancestors which floated in the promordial ocean.

It is also interesting to note the close correspondence in manner of operation of the motor function of the alimentary tube with the manner of operation of the motor function of that other great tubular system of the body which is composed of the heart and blood vessels. In both there is automatic, rhythmical initiation of contractile impulses, and these impulses in both are controlled by the opposed vagus and sympathetic nervous systems and by chemical agents; by which controls modifications of the motor function are produced to meet the exigencies of life.

The motor function of the alimentary tube may be so disordered that evacuations of the bowels are habitually infrequent or insufficient, or the bowel contents excessively dried out. This disorder, which affects mostly the large intestine, is known as chronic constipation. Hurst defines constipation as a condition in which none of the residue of a meal taken within eight hours after a defecation is excreted within forty hours.

Among the numerous causes of this disorder wrong eating is prominent. The food may be taken irregularly, it may be too small in amount, it may be deficient in cellulose and other laxative principles, it may contain too much of the articles which are "constipating," it may produce indigestion, it may be excessive in quantity, it may contain too much irritating or obstipating roughage, or it may contain too little fluid.

The prophylactic treatment of constipation, among other things, calls for proper regard for diet along the lines suggested in the preceding paragraph. This dietetic prophylaxis is more urgently called for if heredity, occupation, conditions of life, or coexisting or previous diseases make likely the development of this disorder.

After constipation is established regulation of the diet constitutes a very large part of the treatment of every case and usually the most important part; and in many cases it is all the treatment necessary. In this

dietetic treatment the required modification of the customary diet may be only small, or it may be considerable. Even if dietetic regulation is not by itself sufficient to bring about a cure, it is always of assistance. A cure that is brought about by diet is more apt to be permanent than one brought about by other means.

The character of the dietetic regulation in constipation depends on the conditions present. In order to understand the relation of those conditions to the dietetic indications, it is necessary to bear in mind how the motor function of the intestine normally operates.

Segmentation, which has been alluded to, does not have so much to do with constipation as peristalsis, although excessively active segmentation, by speeding up the absorption of water, may be a factor in its production. Peristalsis is produced by the contractions of circular and longitudinal muscular fibers placed in superimposed layers in the wall of the intestine, which are immediately excited by the rhythmical impulses coming from the plexuses of Auerbach (the "nodal" tissue distributed between the muscular layers), but which are regulated as to place, time and intensity, by influences which come to those plexuses from without. These influences come through the blood stream in the form of chemical excitants as the endocrine secretions and the hormomes, the latter being chemical messengers sent on ahead to start the activity required; and they come as reflex stimuli through the vagus and sympathetic nervous systems: through the vagus (vagosacral system) come stimuli causing generally increase of tone and more active movement, and through the sysmpathetic system come stimuli causing diminution of tone and stoppage of movement. These impulses are aroused and intensified by mechanical and chemical irritation of the intestinal wall, by distension of the gut, by cold applied in enemas or drinks and in cold applications to the body, by the ileocecal reflex which is excited by the passing of food from the stomach into the small intestine and which facilitates the discharge of the contents of the terminal small intestine into the large bowel, by the gastrocolic reflex which is aroused by filling of the stomach and results in mass movement of the contents of the large bowel, by the defecation reflex which is aroused by the arrival of a small amount of feces in the rectum and is strengthened by voluntary abdominal pressure, by pain in the abdominal cavity, and by psychic stimuli such as operate when the smell of food arouses in the hungry individual the gastrocolic reflex, or when mental states such as fear and anxiety exercise their influence through the vagus and sympathetic systems.

Some articles of food acting locally on the intestinal wall stimulate increase of peristalsis, while others fail to do so sufficiently to maintain normal peristalsis. The articles which contain the laxative principles in good quantity may be divided into the following groups (modified from Boas):

1. Articles containing considerable cellulose, that is, insoluble residue or "roughage," which acts mechanically to stimulate reflex increase of peristalsis. Examples of such articles are bran, whole wheat, rye and graham bread; and in lesser degrees, oatmeal and cornmeal mush; and in varying degrees, cabbage, cauliflower, spinach, carrots, parsnips, turnips, squash, peas, beans, lettuce, celery.

2. Articles containing organic acids, as fruits such as apples, oranges, grapes, lemons, and as sour milk.

3. Articles which contain sugar, especially milk sugar, fruit sugar and glucose. Figs are laxative not only because of their seeds and fiber, but also because of their large sugar content. Molasses is notoriously laxative.

4. Articles containing fat in abundance, as butter, cream, olive oil, mayonaise, bacon and alligator pears.

5. Effervescing articles, as the carbonated beverages, and the flatulent vegetables, which may excite peristalsis by distension as well as by direct irritation:

6. Salts, as table salt and the saline mineral waters.

7. Water, which may act by the stimulating effect of its temperature, and by the distension which it produces, but which acts regularly by favoring fluidity of the bowel contents and their easy passage.

Articles of food which are undesirable from the viewpoint of the therapeutics of constipation are those which are deficient in insoluble residue, like boiled rice, white bread, sweet milk and cheese; those which cause indigestion, like pastry and excessive sweets, and those which have so much roughage that they produce large obstructing masses in the intestine, or excite spasmodic contractions in the gut which act obstructively, or irritate the intestinal mucosa to the extent of producing colitis.

Important indications regarding the diet come from the condition of the bowel as regards its tone. It is customary to differentiate constipation into atonic and spastic, with combinations of the two conditions. In the atonic, relaxed condition of the gut, the articles of food containing mechanical and chemical irritants may be allowed more freely than in the markedly spastic conditions, in which there is a tendency to spasmodic contraction of the gut; and when the spastic condition predominates, a smooth diet may be required, with abundant fat.

The region of the colon where the delay in progress of the bowel contents is chiefly manifested may present special indications; as in cecal constipation, with the delay chiefly in the first part of the colon, roughage may be required in larger quantity than in rectal constipation: in the latter condition oily laxatives and fatty foods may be the more effective, and also water.

The presence of inflammatory conditions in and around the gut may modify the otherwise indicated diet. In some acute conditions, as appendicitis and typhoid fever, accompanying constipation may give dietetic indications quite different from those ordinarily presented. In these and some other conditions the constipation appears to be a constructive procedure on the part of nature, part of her curative or safeguarding plan, and thus entitled to very conservative treatment. Colitis with constipation may call for special regulation of the diet to prevent irritation of the inflamed mucous membrane and spasmodic contraction of the gut, as well as intestinal toxemia. In constipation occurring with diabetes the dietetic indications may be subject to special modification on account of the restrictions of the diet imposed by the diabetes. In some diseases of the upper part of the digestive tract it may be impossible, at least temporarily, to give the dietetic treatment called for by the accompanying constipation. And the peculiarities of the patient may modify the dietetic indications as generally presented. Certain articles of food which some take freely and with advantage, produce bad consequences in others. Sweet milk to most is constipating, yet to a few it is laxative. Many cannot take bran without undue irritation of the colon or disturbance of digestion, although it is a form of roughage generally effective and well borne.

The first laxative food to be used is water, of which a half pint or pint may be taken an hour before breakfast, preferably moderately cold, between 60 deg. F. and 70 deg. F., and not below 50 deg. F. So taken it is often sufficient to bring on a movement of the bowels. The other laxative foods should be given according to circumstances. In constipation associated with spasticity

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Hyperthyroidism

Present Status of Diagnosis and Treatment Based on Etiology

A. I. RUBENSTONE, M.D.,

Philadelphia, Pa.

Although the relationship of thyroid dysfunction to general manifestations of the disease has been fairly accurately known since Parry in his original description in 1815 emphasized the importance of cardiac disturbance associated with it, and, although followed by the more detailed descriptions of Graves, Basedow, Stokes, and Trousseau, it remained for this century to disclose the actual functional status of this gland in determining the syndrome associated with its hypo-or hyperfunction.

The clinical manifestations of marked disordered function of the thyroid are dwelt upon in great detail in every text-book, and every student is familiarized with the striking clinical features of the disease, so that in a marked case of hyper- or hypofunction of the gland any casual medical observer can make a diagnosis with ease, but the practical researches of the past ten years have further illuminated the subject to such an extent that disturbances in the activity of the gland are more readily diagnosed in the very early or incipient stages, and these researches brought forth the following facts:

(1) Isolation of the active substances secreted by the thyroid gland (Bauman) and the recognition of its chemical formula (Kendall).

(2) The accurate clinical estimation of variation in metabolism by such workers as DuBois, Benedict, etc.

(3) By David Marine's practical experiments, leading to definite conclusions as to prevention of thyroid dysfunction, and the treatment of the developed condition, and also the role played by other endocrines, especially the adrenal gland, in activating the thyroid.

The thyroid gland, because of its peculiar histology, is endowed with a duel role: (1) the splitting up of the iodin containing molecules of any compound of iodin which enters the organism, and (2) the conversion of the iodin into the specific thyroid product, thyro-iodin or thyroxin, and (3) storing the thyroxin in its intercellular spaces in the colloid that it may be taken up by the circulation for specific dynamic purposes.

The important relationship that iodin bears to tissue function is evidenced either by the absence of sufficient iodin in the system in the syndrome myxedema or produced artificially by total thyriodectomy. The symptoms elicited in such condition at once strikes us as due to lack of heat production, both physical and mental, and therefore a subnormal metabolism; and, on the other hand, in conditions in which there is hyperactivity of the gland an opposite reaction is produced, life becomes exquisitely tense and excessively responsive to stimuli.

Of the actual chemical reactions carried out by thyroxin in the tissues little is known, but the chemical and physiologic properties of the substance indicate that it is used directly in the process of oxidization as a catalytic agent, hastening the rate of formation of a quantun of potential energy available for transformation on the excitation of cells. In other words, it stimulated individual cell respiration either physically by increasing the permeability of the cell membrane; and this may be applied to the organism as a whole as well as to the individual cells.

The human body contains about 14 mgs. of thyroxin, and in normal individuals the amount varies within relatively narrow limits. Thyroxin is not completely exhausted in the body until eight weeks after introduction, as is evidenced experimentally in thyroidles individuals, and the daily dose of thyroxin required to hold a thyroidless individual in a state of equilibrium is .75 mg., which is probably the daily amount discharged from the gland into the system.

Meyer, in the Marine Laboratory in Florida, found that iodin increased the electric conductivity of water in which nerve was immersed at the same rate that it increased the conductivity of the nerve itself, and, indeed, Crille's researches on the increased electric conductivity of the brains of animals in a state of acute iodism are very convincing. In forming the postulate that the organism of man and animals is an electrochemical mechanism which obeys physical laws, namely, that the cells in the nerve system are batteries and that the action current of stimulation is electricity, and that through oxidation electric energy is generated, one realizes the actual means by which metabolism is accomplished. In other words, increased functional activity is synonymous with increased electric conductivity. It is therefore evident that thyroid activity is responsible for this condition.

In the wake of increased iodin liberatd to the tissue cells follows increased metabolism such as we have associated in infection, e.g., when rapid pulse, hypertension, increased heat and nerve phenomena ensue. That the thyroid symptomatology is not entirely due to thyroid pathology alone is a well-recognized fact. The syndrome known as hyperthyroidism is the sum total of associated interactivity between probably the entire endocrine system because of the intricate inter-relation between these glands.

One substance in particular I wish to dwell upon, and that is the adrenal gland. It is well known that the adrenal gland is an important adjunct as a powerful cell activator, and its medullary substance, adrenalin, is capable of producing symptoms referable to increased energy transformation, such as emotion, exertion, injury and infection. In other words, since it is recognized that thyroid activity is productive of active oxidization of the tissue adrenalin certainly increases and accelerates its function, evidenced by increased blood pressure, rapid pulse and respiration, leucocytosis, pupillary and skin dilation, resulting in increased perspiration and lowering organic threshold; e.g., the kidney.

It also is capable, through its peculiar action of influencing chormatism in the system and, just as injury and emotion, is capable of chromatolysis of cerebral cells. Crille showed by very accurate experimentation that it causes an immediate increase in electric conductivity of the brain, with resultant heat production, is evidenced by his thermocopule records. He also found that in iodized animals adrenal injection caused a more prompt increase in cerebral temperature, which may be a physical interpretation of the sensitization of the organism to adrenalin in hyperthyroidism, as evidenced by the Goetsch test. Its action, however, from all our knowledge now available is of an evanescent character, very much like the dynamic automobile started; its action is principally on the thyroid and probably other andocrines. fleeting and its influence is mainly an excitor factor,

It therefore is apparent that the probable role of the medulla of the adrenal gland, or adrenalin, has its most useful function in activating thyroid secretion, which, in turn, oxidizes the tissues in a very slow and continuous manner, as indicated previously. Recently some new light has been thrown on the functions of the adrenal gland, tending to show that it, like the thyroid, also plays at least a dual role. Experimental evidence tends to show that when the adrenal cortex is injured or destroyed heat production in the system is greatly increased. This, and the fact that in the second week of life during the rapid rise of heat production in the system, autopsy revealed a hemorrhagic infiltration in adrenal cortex, would seem to indicate that the adrenal cortex has an inhibiting influence on thyroid function, just as the medulla has an accelerating influence, and we are now in the midst of experimental research in our laboratory which may lead to a new angle in the treatment of hyperthyroidism.

Metabolism is still the fascinating, incompletely understood mechanism, the sum of the changes which are constantly taking place in the cells of the body whereby new cells are constructed and old cells are destroyed. Metabolism is a process of oxidization and reduction within the cells of the body. It represents the remarkable physio-chemical union which takes place in the tissues after ingested food reduced to the end products of digestion is absorbed and unites with the inhaled oxygen, as a result of which nourishment is supplied and heat generated. The mechanism by which these remarkable feats are accomplished are largely hidden from us. What structural or chemical differences exist in the different organs of the body to specialize their function one does not know. Multitudes of reactions are constantly going on in the body, each different from the other and yet closely allied with each other, sometimes in close proximity and sometimes functioning for off from their habitat to influence another organ, but all reactions interdependent in order that the whole economy may perform with normality.

These total reactions make for the very basis of life, for the force which runs along on lines determined within the species, making possible development of bodily and mental characteristics, but the most remarkable feat of metabolism is the flexibility by which this total mechanism may be increased to manifold times its normal force under required stress, as in athletic activities, etc., or with equal facility be reduced to a minimum compatible with life, as in normal sleep.

In thyroid hyperfunction it was long known that patients were consuming more food than they required to meet their caloric needs, and also that they were excreting more nitrogen in their urine than they were taking in their food; in other words, they were known to be in a state of nitrogen inequilibrium, or starving, in spite of consuming and utilizing more food than a normal individual of the same height and weight.

Mueller first described the paradoxic manifestations of hyperthyroidic patients, namely, the enormous food consumption and the marked loss of weight. Magnus Levy followed Mueller in demonstrating that the metabolism of hyperthyroidic patients with myxedema was decreased. He was the first investigator to use basal metabolism as an index in the treatment of the disease. For many years following that practically no attention was paid to metabolism studies in this disease until DuBois' studies stimulated more interest in it. His work, very elaborately executed and accurately controlled by keeping patients in respiration chambers for days, emphasized the fact that the most characteristic manifestations of toxic goiter is a higher degree of basal metabolism than is ever reached in other conditions and that it is the most constant manifestation of the disease. (Indeed, the immigration authorities in New York use it in questionable cases.)

However, for practical clinical purposes one could not apply DuBois' work in controlling the course of the disease. His method is that of direct calorimetry. It remained for Benedict to simplify the technic of determining the metabolic rate by the observation that normal individuals under certain conditions consume a constant amount of oxygen per minute per square metre of body surface. This is known as indirect calorimetry, and is accomplished when the individual is connected up by a mouthpiece with a spirometer containing oxygen, the nose being clamped so that the oxygen consumed by the individual in a given length of time is estimated. By this means one is able by frequent estimation to accurately measure the progress of a thyroid case. Too great emphasis cannot be placed here on the importance of reliable technic in this apparently simple test. Many errors creep in unless details are carefully carried out and, if necessary, repeated estimations made in order that accuracy be assured. Of the many factors influencing metabolic rate I need only mention the psychic factors of excitation due to fear, etc., of the test itself interfering with accurate estimation.

By basal metabolism is meant the metabolism at rest after food abstinence for at least twelve hours previous to the test. If food factors are introduced or activity of the patient, accurate estimations are obviously impossible. It seems certain that an increase in basal metabolism represents the fundamental symptom of hperthyroidism just as hyperglycemia is the basic symptom in in diabetes mellitus, and just as the treatment of the latter condition is determined by the variation in the blood sugar so the variation in metabolism estimations measures the degree of hyperthyroid subsidence.

The Kottman serum test for hyperthyroidism is based on the theory that one colloid is able to influence the state of another colloid and through protective action make possible a collodal suspension which in water would not be stable. In the practical application of this test, which is based on light exposure, etc., is fraught with so much discrepancy in its results due to personal equation and inaccuracy that its clinical application adds little in the diagnosis of the condition.

The Diagnosis of Toxic Metabolic States

Too much emphasis cannot be placed on the relationship of hyperthyroidism in the production of diseases as the result of an excess of thyroxin in the body. Practically every system of the body is affected by a continuous over-amount of thyroxin; principally the cardiovascular and nervous systems seem to bear the brunt of hyperthyroid activity. In cases where various degrees of enlargement are also present the symptoms incident to pressure are sometimes the most aggravating of the syndrome; notably is this true of the intrathoracic enlargements of the gland, as well as the symptoms produced by local pressure of the gland on the neck itself and, indeed, at times the thyroid enlargement is entirely substernal, very much like an iceberg of which only a fraction projects above the water.

The typical symptoms of (1) enlarged thyroid, (2) tremor, (3) tachycardia, (4) exophthalmos, on which a diagnosis of hyperthyroidism was formerly based, may be absent almost in their entirety, or any one of the foregoing may be present to the exclusion of the others. The most constant sign, however, is the increased meta-

bolic rate in these patients on repeated examination carefully checked. As previously stated, in well-marked cases the diagnosis is at once apparent, but if the medical treatment of toxic goiter is to be at all successful it is in the incipient stage of the disease that the internist should make efforts to diagnose the condition.

Once a case has progressed to extreme thyroid activity the treatment medically not only becomes a dangerous one, due to tissue alteration while waiting for operation, but the various means advocated in treatment are as efficacious as a huge conflagration with a glass of water, so that I must lay emphasis on the importance of investigating all nervous and functional cardiac patients in which an apparently etiologic factor is absent to account for the nervousness with a view to ascertain the possibility of incipient toxic goiter, and of the cardinal symptoms I should mention rather in order of their importance:

1.—Continued increase in metabolic rate.

2.—Loss of weight and strength in spite of ample food ingestion.

3.—Tremor, rapid pulse and sweating hands.

4.—Tachycardia.

5.—Exophthalmos.

In differential diagnosis neuresthenia seems to be the favorite wrongly diagnosed for hyperthyroidism. Pulmonary tuberculosis, neuro-circulatory asthenia, and paroxysmal tachycardia are often found on closer observation and study to be hyperthyroidism. The association of hyperthyroidism with these and other diseases is emphasized so that bacause a case is hyperthyroidic does not mean that any other condition may not be associated. In most cases it is usually a primary infectious or toxic condition that stimulates the thyroid by hperactivity. Time does not permit to discuss simple enlargement of the thyroid, which one should always bear in mind should always be suspected of becoming active at any time. Inflammation of the thyroid and malignant disease which give you, in addition to the symptoms of hyperthyroidism, marked local pain and manifest themselves in local disturbances.

The treatment of thyroid hyperactivity should bear some relationship, especially in its incipient stage, to our present knowledge of possible etiologic factors concerned in its production. Of significance in determining etiologically the relationship of iodin deficiency to thyroid enlargement is the far-reaching work of Marine and Lenhardt; first, as a result of investigating thyroid carcinoma in brook-trout for the Pennsylvania Fish Commission, when the disease was eradicated by feeding small quantities of iodin and reducing the crowding and unsanitary conditions surrounding the fish, and, secondly, their excellent results in endemic adolescene goiter in school children in Akron, Ohio, with seasonal administration of iodin.

McCarrison's elaborate studies in endemic goiter regions are fairly conclusive of the relationship of goiter and a possible virus in regions where iodin deficiency exists, and, indeed, it has been shown that in such regions congenital adenomata were prevented by feeding pregnant mothers with iodin. Since the thyroid gland responds readily to irritation by increased functional activity, it is reasonable to assume that infections, especially of a chronic, focal nature, are important elements in activating idoin production in the gland. Therefore, in the treatment of this affliction, of prime import is the elimination of every possible source of irritation, whether it be apical tooth abscesses, sinusitis, tonsillitis, gall bladder or appendix.

While, as heretofore indicated, all the symptoms in the body are involved in thyroid hyperactivity, the nerve circulatory and digestive system are the hardest hit. To relieve the condition two modes of approach may be necessary in limiting the activity of the gland; first, direct iodin therapy. Iodin therapy may be used in the early incipient stages before the gland secretion has attained a great momentum, namely, as a prevention in susceptible individuals, such as the adoloscent thyroid enlargement with apparently no other symptomatology and the prevention of congenital adenoma by administering iodin to a pregnant mother. It is also sometimes useful in the early stages of hyperthyroidism with symptomatology only individuals with a very limited increase in basal metabolic rate), and Luogols Sol. in exophthalmic goiter has been found useful (Mayo Clinic) to reduce high basal metabolic rates in toxic goiter preliminary to operation. The limitation of gland activity may also be accomplished through other means, namely, limitation of body needs, and therefore it becomes absolutely necessary that every form of environmental irritation to the nervous system be removed, and this is accomplished by absolute rest and by congenial and soothing association, free from emotion and excitation. This in turn will quiet the circulatory system especially evidenced by the recession of the hypertension, tachycardia and excessive urinary and skin secretions.

There also followes an amelioration of symptoms due to general unstriped muscle fibre stimulation; e.g., intestinal diarrhea. From the nutritional standpoint it will tend to limit proteid waste. Especially should it be emphasized here that these patients should avoid excessive intake of foods tending to stimulate metabolism, such as fat, proteids, especially red meats, glandular tissue, etc., and alcohol, and that their rations should be adequate and of a high carbohydrate value. Ingestion of large quantities of water will reduce the tendency to acidosis. Every degree of improvement in the course of treatment can be accurately measured by estimation of the basal metabolic rate, which, together with the pulse rate, is probably the best indicator of thyroid activity.

The rest of the medicinal treatment is largely symptomatic, such as bromide, digitalis, alkalis, etc. Marine tabulates some 239 drugs which various authorities from time to time have advocated as specifics in hyperthyroidism, and not one of these have stood the test of time. The brilliant results occasionally obtained by administration of drugs, I believe, are largely due to the general care and rest of the patient, and the fact that in a percentage of these cases the hyperactivity seems to be self-limited as cases of marked hypermetabolism are occasionally encountered who, under the most casual treatment, spontaneously improve. This is especially true of the exophalmic type, while others less apparently afflicted are little influenced by other forms of medical care and grow progressively worse until operated upon. Sometimes markedly asthenic patients demand blood transfusion. (One case marked blood fall.)

The role of the *x*-ray in thyroid disease is important diagnostically in revealing the extent of the enlargement and the anatomic influence of the enlarged gland on the surrounding structures, and in the treatment of hyperthyroidism the *x*-ray is an important adjunct in quelling the hyperactivity of the organ. The results of treatment by *x*-ray vary, due to the fact that the pathologic physiology varies in such great limits and the personal equation enters into the treatment as regards

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The Treatment of Delinquent Glands*

JOHN D. QUACKENBOS, A.M., M.D.,

EMERITUS PROFESSOR IN COLUMBIA UNIVERSITY; FELLOW OF THE NEW YORK ACADEMY OF MEDICINE, AND OF THE NEW HAMPSHIRE MEDICAL SOCIETY, ETC.

New York

Up-to-date physicians who are not under the ban of that ultra-conservatism which has long made our profession notoriously antagonistic to intelligent progress, whether it be the outcome of research, of empirical experiment, or of imaginative dreams that have so often pointed the way to scientific discoveries—may be divided into three classes:

I. Those who believe that the future of medical practice will centre exclusively in the development and adjustment to the treatment of all human ills, of irradiation, with recondite possibilities kerneled in its multi-nominal rays that travel through space with the speed of light, notably the gamma rays from radium, and the recently discovered Millikan super x-rays, many times more penetrating than ordinary x rays, in that they are capable of passing through six feet of solid lead before they are extinguished.

II. Those who cherish a similar faith in the future ascendancy of organotherapy,

III. Psycho-analysts and psycho-therapists, and by this I do not mean cultist addle-pates, new-thoughters, or insensate fanatics, but conscientious educated physicians, who, devoted to judicious psychic investigations, apprehend from countless personal experiences and successful applications of principles, the measureless potentialities of the subconscious mind, and have come to believe, realizing that no abnormal condition is purely mental or purely physical, that the power of the spiritual personality measurably to control the psychic elements of disease and through such control the physical dysfunction, is without horizon. Man's finest work is not a product of his conscious mind.

Personally, I maintain that there is a pay-streak of golden truth in each one of these three positions, and so defer to them all when need be with the aid of collaborators. For is not the physician who is unwarped by prejudice under obligation to exploit for his patient all that science has revealed and fellow-feeling prompts? Does not this conjugate with the spirit of his Hippocratic oath? to keep abreast of advancing knowledge so as to corral it in the cause of remedial and preventive medicine? And what right have they who learn everything by halves and shifts, to elevate their ignorance, their kulturesque contempt prior to examination of facts, to the dignity of pyrrhonism? The deep-fetched Plato said that those are sacrilegious who think nothing exists except what they can grasp with their hands. To quote the "Proverbial Philosophy" of Martin Tupper, "charity should not be a stranger to the board that is spread for brothers."

Let me prelude my discussion of Dr. Hunt's admirable paper, learned, honest, promise-crammed, implacably wise, with discriminating insight that has separated the function and activities of the prostate gland from those of the interstitial cells of the seminiferous tubules in the testes, with the statement that I have experimented for a score of years with glandular extracts and desiccated gland substances, not in the laboratory through the medium of guinea pigs and white rats, for I am immovably convinced that what applies to the *cavia aperea* and the *mus rattus* does not necessarily apply to man, who is the only spiritual animal. Therefore, although a member of the Association for the Study of Internal Secretions, I venture to base my conclusions on clinical experience, and I have obtained results which are most grateful to my patients and satisfactory to me, by the oral administration of the glandular substances indicated.

And I believe, moreover, that the endocrine glands form a system which functions as a unit; that, while each gland has a province of its own, it has others which it expresses in conjunction with its associate glands, to influence the way in which our organs act. It not only regulates some important office of its peculiar zone of sway in the body, but modifies those of many or of all the other members of the internal secretory system. The disorders we treat are, therefore, from this view point, pluriglandular in their physical causation, or usually involve a dysfunctioning of several interdependent organs linked, as it were, in a chain.

The four cooperative sources to which the cause of disfeatured expression is chiefly referable in many cases of endocrine unbalance, vagary and of hypo- or hyper-secretion, that are becoming conspicuously numerous in these days of feverish demands on human vitality, as well as of reckless disregard of eugenic principles, are the thyroid, the adrenals, the sex glands or gonads, and the pituitary. I need hardly remind you that the thyroid is the gland supreme of energy production, the director and quickener of metabolism, the regulator of the speed of living, and the antagonist of self made toxins. That the suprarenals, the so-called "courage glands," are the glands of aggressiveness, of pugnacity, of emergency effort, obnoxious to a hyperactivity exacted by the stress and strain of modern life, and so unstinted that oxidation becomes inadequate, nutrition imperfect, and men and women are reduced to nervous wrecks. Played out adrenal glands largely explain so-called neurasthenia, the fashionable American disease, with its pandemonium of mental tortures.

It is believed that whereas the thyroid facilitates the generation of crude energy or capacity for performing work, the pituitary disposes of it in the body, regulating development of the osseous and genital systems, bodily weight, temperature, blood pressure and mental function. Pituitary caprice accounts endocrinously for many of our cases of imperative compulsions and obsessions, for kleptomania, pathological lying, and general moral inferiority.

The gonads (ovaries and interstitial glands), besides determining sex traits and stimulating sex functions, promote metabolism and favor oxidation. The whole endocrine system is spurred by the orchitic substance containing the testicular hormone, equally well adapted to the stimulation of either necessitous sex.

These glands of internal secretion constitute, besides, a detoxicating mechanism, and it has been established that were it not for the auto-protective substances produced by the ductless glands for the pur-

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pose of neutralizing internal poisons, the human system could not exist in this planet.

No one is ignorant of the oxidizing value of insulin, the hormone secreted by the islands of Langerhans, in the treatment of diabetes mellitus, through its carbohydrate control. But are you as familiar with the fact that the renal glomerular tissue of the ox has a similar application in nephritis with albuminuria and casts, lessening albumen elimination, and stimulating renal efficiency by making the kidneys better sieves to strain offending toxins out of the blood? This glomerular substance, while not curing the disease, does the work of degenerated and crippled cells, and tends to arrest the course of the disorder. I have administered it with such happy results that I have called it the insulin of the kidney.

But you are expecting me to say something about my particular treatment for delinquent glands, as you know my specialty is psychotherapy, and I may speak to you with the courage of a conviction founded on 20,000 experiences with the subliminal consciousness. Very briefly in resumé of my philosophy and its application as an accessory to physical treatment in glandular incompetence:

I am persuaded that there exists in human beings a mass of latent unused power—a reserve fund of energy, wich is applicable to emergencies, to extraordinary demands on the fortitude, exalted control, innate aptitude, or regenerating faculty of the individual. It is this power that may be incited to control the psychic elements in all diseases, and so effect the cure of those that are functional and the alleviation of suffering in those that are organic. It is this power that commands the output of thought, the projection of genius, the material expression of all that is best in the man. It is this power which, dynamically directed and applied, regenerates the outcast, sobers the drunkard, rescues the drug-fiend, restores to normal thought and feeling the distraught and suicidal, the perverted and the obsessed.

We are all living within our power limit, energizing below our maximum. Something lives and rules outside, and yet pertaining to, the man we see and know and associate with, that conditions his intellectual and moral expression and controls his very will.—The psychological entity we call the Ego, which is not a by-product of the brain. This something is other than God. It is variously known as the subconscious mind, the subliminal self, the superior spiritual personality. The abeyant efficiency may be harnessed and made available in the work-a-day world, through suggestion, which is nothing more than an earnest, straightforward, dynamic appeal to the higher self. The object of suggestion is to establish self-control in physical, mental, or moral relaxation; to impart pluck, push, nerve, self-reliance to the mortal mind; to strengthen the will; to bring into personal touch with the truth, which always emancipates. Suggestion, in other words, makes efficient, and efficiency in a state of perfect action is happiness.

The encouragement of normal gland functioning is a substantial reinforcement of psychic treatment. It contributes to the induction in the brain protoplasm of a receptivity more appropriate to the acceptance and carriage of suggestions, and reciprocally, the several methods of stimulating glandular proficiency may be materially enhanced by pertinent suggestions. The administration of the proper gland substances markedly favors my suggestive treatment. For susceptibility to compromising habits and manic depressive states is always a symptom of some underlying constitutional disturbance, or a defect in the functioning of the internal glands. The mind is maintained in proper balance through the normal action of these ductless organs. So getting rid of a psychic defect is only a part of the problem.

But be it remembered that the endocrine organs, while they influence bodily growth and character development, either to push or impede them, do not produce or create them. As in political life, there is a notable difference between leadership and dictation. The physical, together with the intellectual and moral characteristics of a given individual, are definitely determined by the chromosomes or ultimates of the cell nuclei throughout the body, which become actively responsible for the induction of peculiar traits from the moment of fertilization of the ovum that develops into the embryo. The endocrine glands are then to be regarded merely as the directors or perhaps confirmers, or possibly multipliers, of certain chromosomal or constitutional controls.

There are mental conditions, psycho neuroses, with their miscellany of obsessions, phobias and hallucinations, and there are habits that handicap and disennoble, for which psychic treatment is eminently apropos,—but in the etiology of all such states, even in dementia praecox, there is more than likely to rankle an endocrine cause. A more unpromising prospect than a nervous insolvent, obsessed to the nth power, can hardly be imagined to try the patience, ingenuity and exhaustless sympathy of the long-suffering physician. The united efforts of endocrinologist, roentgenologist, and suggestionist, may be a sine qua non to the redemption of such ill-starred sufferers.

My method of procedure is thus:

I put my patient to sleep with trional or some other innocent hypnotic, and then suggest to him, in language intelligible, luminous, and forceful, prompt and complete response to the glands I am prescribing, and compliance with the instigations that apply to the particular mental defect or moral decline. In case he prove not amenable to the impulsions and oral glandular treatment, or there exist necessity for more radical and immediate action than desiccated glands by the mouth can transmit, I turn him over to my coadjutor, Dr. Hunt, for implantation, or unite this with psycho-dynamic treatment, which is indicated in all cases of mental break-down, unmistakably due to one of a miscellany of focal infections.

Lewellys Barker of Johns Hopkins recently said that "he who would be a skillful diagnostician or an expert therapist, dare not neglect either the somatic or the psychic deviations from normal functioning."

Naturally, I am not in sympathy with the superficial conclusion that a *man is what he is* because of his glands. That his correlated endocrine organs are the controllers of his character and temperament—for they are not, unless their bidding is slavishly and impotently and humiliatingly conceded. That personality is determined by the quality and quantity of the internal secretions. Personality is the sum of the miscellany of elements that individualize the man. It is the essential character of a human entity that determines its existence as a distinct individual, both as a self-conscious and a sub-conscious being. It is physical, consisting of an aggregate of countless millions of cells, living creatures, forming an organic whole, each cell executing its applotted part in that exquisite division of labor that characterizes this biological state. Personality is also rational and spiritual.

The implication, however, that man is released from accountability for reprehensible and even criminal acts through the compulsory restraint of mental motions and their bodily reactions caused by the imperfect secretions of the ductless glands, is as dangerous as it is untenable. It implies a contention on the part of certain fadridden writers on the influence of the endocrine glands in the determination of personality, that there is no such thing as responsibility.

A man must do as his glands dictate. He comes into this world predestined by the inter-relations of his self-made energy-mobilizing hormones, in a piece of machinery evolved through millions of years from his origin as an amoeba, to be sluggish and stupid, restless and irritable, insincere, lying and thievish, sexually immoral or perverted, even melancholic, maniacal, and murderous, as the case may be. He is the creature of his endocrine glands. He was made by a "process," and his *character* is a "matter of standards in the vegetative system" dependent on "intravisceral pressure"—character, the only eternal thing in human life, the possession alone that survives dissolution. What a sickening piece of philosophy is this latest atrocious assault on human common sense! The standards of character were promulgated by the Founder of the Christian religion, and were not evolved from visceral pressure. Such a conception argues moon-stricken ablepsy. It is one of the cleverest pieces of sophistry ever foisted on human attention by the arch enemy of mental peace and purity. Man has been endowed with the moral fibre to make good in the face of a glandular pronunciamento contrariwise to yield to allurement and passion, and it is his bounden duty so to make good despite the insidious urge of his own over- under- or abnormally-acting glands.

Yet it is true that the glands of internal secretion must be reckoned with in the treatment of mental, moral and physical disorders. It is true that the encouragement of their normal functioning is a substantial reinforcement of psychic treatment, since it contributes to the induction in the brain protoplasm of a receptivity more germane to the acceptance and carriage of suggestions. Character blemishes are fostered and more readily expressed by reason of defects and dysfunctions in the endocrine system, which are therefore to be taken into account by the physician who treats moral disease.

But note the sophistry. If a man is foremeant and equipped by nature to be jealous, ill-tempered, impure, thievish, false, he cannot help it. If he is manly, honest, chaste, unselfish, noble, chivalric, he has no credit for it all. His glands compel it, and he cannot be otherwise. Law and order would consequently go by the board. The explanation of cases of stealing, gambling, lying and arson, by Stekel in his "Peculiarities of Behavior," as the execution of unsatisfied sexual appetency, is equally icarian and more profanely mischievous.

Fortunately, in contravention of such arguments, there *are* gland products that impart moral energy and oppose moral cowardice.

Psychic factors in the problems of therapeutics are more successfully exploited to-day, when the effects induced by suggestion are augmented by normal or approximately normal hormones. So the short cut to the soul is via the endocrine glands. Endocrinoiogy has been defined by ultraists as the chemistry of character, which explains criminal deeds and exonerates from responsibility therefor. It may better be explained as the chemistry of nervous expression against which character has sometimes interminably to revolt. This chimerical chemistry of character used to be called human nature, and those who do not put up a fight against the evil urge of it are sane enough to be punished for their sins. The policy of absolving a criminal because he is an endocrine defective, recently pushed in court—to save the necks of two murderers from the noose—would lead to immeasurable injustice and insecurity.

In conclusion, let me again insist that there is something in the sane man more potent than his endocrine glands.

Christ proved that human nature, this chemistry of character, is not an incoercible condition, as some of these deriders contend. In any case of mal-coordination expressed in the commission of sin, a human spiritual efficacy, adequate to control, can be summoned into commission to inhibit wrong action. Then, the conscious command of the individual enforces the obedience of the faultily acting physical part. The common, plain, every-day man, no matter what his glands incline him to do, can be lifted from sordid levels, reconstructed, and made fit to walk abreast of seraphs.

If, then, man be but a ***predestined*** plaything of his glands, there remains a spirit within him which joyfully accepts and heroically applies this dictum of Napoleon:

"Should Destiny turn against me, I will turn against Destiny, Yes, I will be the antagonist of Destiny."

And compare W. E. Henley's famous and immortal stanza, in his poem of "Invictus:"

> "It matters not how strait the gate,
> How charged with punishments the scroll,
> I am the master of my fate,
> I am the captain of my soul."

I,—not my glands! but I, the veritable cosmic Ego, with its panoply of power, abaft the throne of my animal life.

Glands may and do prompt to unworthy, even to inhuman action; but the puissant soul, conscience-guided by the precepts of the moral law, and inspired by the clear insight, unerring judgment, and dauntless courage borrowed from its own spiritual personality, has at its command, thank God, the power to silence the importunity of these Machiavellians of the Flesh, and nobly asserts its prerogative.

The Tubercle Bacillus

(Continued from page 35)

Moreover, he got some results by using this. However, he is not yet on the right path, for, though his vaccine is well tolerated, without strong reaction and can be easily handled, the results are not really satisfactory.

In my opinion, it is necessary to find the means of combating, in the human body, the tubercle bacilli, to such a point that they become, while in the body, nonacid-fast and freed from the capsules. These bacilli should then be cultured. This is superior to the mechanical method, for naturally, the mechanical method of freeing the bacilli from the capsules must injure them greatly. How to approach this point is an open question, but I am sure the time will come when it has been reached.

REFERENCES:

Park: Pathogenic micro-organisms.
McNeal: Pathogenic micro-organisms.
Hiss: Bacteriology.
Kendall: Bacteriology.

St. Joseph's Hospital, 143rd St. and Brook Ave.

The Physician's Library

Thoracic Surgery: The Surgical Treatment of Thoracic Disease. By Howard Lilienthal, M.D., Professor of Clinical Surgery at Cornell University Medical School. Two Octavo volumes totaling 1,294 pages, with 90 illustrations, 10 in colors. Philadelphia and London: W. B. Saunders Company, 1925.

Anything from the pen of this distinguished author is always welcome by the medical profession. He writes only when he has something to say, and when it is said he concludes his remarks. As a result, these two volumes stand out characterized by a high degree of surgical excellence, to which is added a splendid method of expression.

To the medical man who does thoracic surgery these volumes will be a beacon light, because, included within their pages is every topic which can properly be headed under the subject matter. Dr. Lilienthal's very wide experience in this branch of surgery allows him to speak by the book. His contribution will be regarded by surgeons as one of the best yet presented to the profession on any surgical subject, and he has done well to segregate the thoracic surgery and bring out its importance in detail. The text is made doubly valuable by most useful and enlightening illustrations. Special chapters are written by Doctors E. A. Graham, Leopold Jaches, William Branower, Reuben Ottenberg, William C. Lusk, J. Byrnes Amberson, Jr., and Andrew Peters.

A Text-Book of Medical Diagnosis. By James M. Anders, M.D., Professor of Medicine, and L. Napoleon Boston, M.D., Associate Professor of Medicine, Graduate School of Medicine, University of Pennsylvania. Third Edition, 1,422 pages, 555 illustrations, Philadelphia and London: W. B. Saunders Company, 1925. Cloth.

It is a pleasure to see the new edition of this book appear with much new matter added. Some of the descriptive cases which were found in the previous editions have been omitted to make room for the newer diagnostic features, and everything has been done to bring the book up-to-date.

It would be impractical to mention the great number of new subjects which have been added, and it must suffice to say that they include everything along the line of diagnosis which has appeared since the second edition of this book, about ten years ago. The authors have given us a most useful volume.

The Art of Medical Treatment. By Francis W. Palfrey, M.D., Instructor in Medicine, Harvard University. 463 pages. Philadelphia and London. W. B. Saunders Company, 1925.

The author hits the high spots in treatment of diseases, taking care not to go into too much detail, but giving the essence of treatment. The book serves a useful purpose in refreshing the mind of the reader. It aids in fixing definite facts of treatment, and it further gives one the very latest in therapy. The style is pleasing, the contents are most useful, and the book is one which can be highly commended.

Oscular Therapeutics. By Doctor Ernst Franke, of Hamburg, translated by Clarence Loeb, M.D., of Chicago. 171 pages. St. Louis: The C. V. Mosby Co., 1925.

Franke's work will prove of particular interest to general practitioners, as he goes into the subject very thoroughly. The method of general handling diseases in their connection with Ocular Therapy is very interesting, and the book is bound to prove of value.

Development of Our Knowledge of Tuberculosis. By Lawrence F. Flick, M.D., of Philadelphia. 783 pages. Published by the author, 738 Pine Street, Philadelphia, 1925.

This is a very learned dissertation on the subject of tuberculosis written by a man who knows as much about the disease as any one in this country. Making no attempt whatever to discuss treatment the author has devoted his time and space to the knowledge of tuberculosis from the time it was first recognized as a definite entity down to the present. It is most interesting to follow along through the dark ages of medicine and learn how little was known in those days, when we compare the wisdom of today. And yet, we feel and know that there is much for us to learn before the white plague is placed under control.

Doctor Flick takes up the infectious nature of tuberculosis; goes into pathogenic conditions; brings out the findings of many of the leaders in medicine; and, in short, treats the subject in a way never before accomplished. It would, as the author says, require a volume to review the work which has been done during the last few years, but it is not too much to say that Doctor Flick has accomplished a great meaning in reviewing this subject so thoroughly, and in presenting so much new material.

Applied Biochemistry. By Withrow Morse, Professor of Physiological Chemistry and Toxicology, Jefferson Medical College, Philadelphia. 958 pages. Philadelphia and London: W. B. Saunders Company, 1925.

The purpose of the author is to, as he expresses it, weave the woof of biochemistry into the warp of medicine.

It has long been recognized that the average physician has been all together ignorant of Biochemistry, and it has remained for the author to present the subject in such a way as to make the medical man something of a biochemist after he has mastered the intricacies of this book. We can say in passing that it is some task, but believing as we do that practitioners should have a more definite knowledge of biochemistry, we commend this volume to our readers.

Objective Psychopathology. By G. V. Hamilton, M.D. of New York, N. Y. 354 pages. St. Louis: The C. V. Mosby Company, 1925.

This book is divided into two parts. Part 1, Clinical Psychopathology; Part II, Principles of Objective Psychopathology. They are illustrated by typical cases, and they show the disturbances of the human equipment which range from a mere lack of poise to a grave form of insanity. The author hopes that this book will focus attention upon the importance of method in psychopathologic research, a hope which we see no reason should not be gratified.

Rejuvenation by Grafting. By Dr. Serge Voronoff of Paris. 224 pages. New York: Adelphi Company.

Most medical men are familiar with the author's work. This book takes up individual cases and demonstrates the results he has had by his operative procedure.

Diabetes: Its Treatment by Insulin and Diet. By Orlando H. Petty, M.D., and William H. Stoner, M.D., of the Graduate School of Medicine, University of Pennsylvania. 133 pages. Philadelphia: F. A. Davis Company, 1925.

This is a hand book for the patient, devoted largely to the dietary of the diabetic patient, with such information as he may need on Insulin. It has practical value for the diabetic.

Simplifying Motherhood. By Frank Howard Richardson, M.D. of Brooklyn, N. Y. 263 pages. New York: G. P. Putnam's Sons, 1925.

Young mothers will welcome this book. The author is one of the best known pediatricians in New York, and as a result of his long experience he has produced a volume which will be a boon to the mother. Doctor Richardson believes that every mother can nurse her baby, and he shows just how it can be done. He goes further and aids the mother in protecting her baby against disease, and in giving her many facts and figures which will aid here materially in taking care of her infant. The book is one which physicians can very well give to their patients, knowing that the patients will be the gainers thereby.

Postoperative Adhesions

The regular use of pituitary extract following abdominal operations will go a long way toward preventing or minimizing the formation of postoperative adhesions, because continual and regular peristalsis in the intestines keeps them from lying together in an inert mass, a condition most favorable for adhesions.—(*A. Scott Gillett, F.R.C.S., in the Practitioner.*)

Postoperative Flatulence

In relieving the flatulence which frequently occurs after abdominal operations, nothing is better than the use of the long rectal tube and the administration of warm enemas consisting of 1 dram of oil of rue in one point of the infusion of chamomile.—(*A. Scott Gillett, F.R.C.S., in the Practitioner.*)

Catarrhal Deafness

If a glass bulb, containing absorbent cotton, is inserted in the tube of a Poltzer bag, and 5 drops of the following solution placed on the cotton, the work of the bag will be more effective.

℞—Menthol	1.00
Chloroform	16.00
Ether, acetic	8.00
Alcohol	8.00

M. Sig.: Five drops to be used on cotton as directed.—(*Sir James Dundas-Grant, M.D., in the Practitioner.*)

Measurements of Congressmen

(Concluded from page 32)

As already stated, the object of the measurements is to learn the anthropological status of members of congress. But with the additional examinations, the scope of the study is broadened and made more valuable, the object being to find the general physical status of all members of congress, that is to determine the physical standing of a legislative body of a nation. This is a pioneer effort, easily misunderstood, if not misinterpreted, and may suggest similar studies of legislative bodies of other countries by their specialists, so that eventually we will have a comparative anthropology of modern legislative man in his prime, and be able to distinguish between statesmen of different nations as to their physical status. This no doubt will be higher than the average physical status of the country, and the probability is that, where the physical status of the legislature of a nation or state excels that of the legislature of another, its average physical status is higher also.

This study is not only of scientific value, but may be of most practical use to the members themselves, by showing them any little defect of any organ, which if allowed to develop may result in premature physical deterioration if not death. At present there is an increase of heart defects and of sudden deaths of persons in their prime and apparently strong. Thus a slight defect in a heart muscle, not liable to be discovered in the usual examination, may be found, and remedied in advance, by following the advice of the specialists, thus prolonging one's life. The chain is never stronger than its weakest link; this applies especially to the vital organs of the human body.

To keep the well healthy and not wait until they are sick is especially important, when it concerns successful statesmen in their prime. We should preserve at least the good timber. If a congressman says he is not interested, he should consent to be measured and examined nevertheless, in order to help science in this therapeutical effort. The medical profession tries to preserve the strong even against their will. If he says he has already had physical examinations, these specialistic examinations may not agree with his former medical examinations giving him a new insight as to his defects and making him more cautious.

Incidentally, every one may work out his own brain weight by the following equation: (Head length—10) x (head breadth—10) x (head height—10) x .000337 plus 406.01 equals cranial capacity in cubic centimeters, which multiplied by .90 gives the weight of the brain in grams on living persons.

The results of these examinations will be put into statistical form, and be analyzed and conclusions drawn and all the results published in technical journals, or in a public document, or both.

Influenza

(Concluded from page 28)

to be a mixture containing nux vomica, and the following is a favorite with us:

℞ Tr. Nucis Vom..... ʒiv
Elixir Peptenzyme, q. s. ft..... ʒiii. M.
Sig. Teaspoonful following meals.

It is very necessary to have the bowel function properly regulated by the means best suited to the case.

With a sincere hope that some physician may find a suggestion that may be of benefit to him in piloting a poor sufferer back to the port of health these few remarks are offered by the author for the approbation, criticism, or censure of MEDICAL TIMES readers.

408 Goodwyn Inst.

Diet in Constipation

(Concluded from page 38)

white bread should generally be preferred, and the softer vegetables, like potato and squash; and the vegetables can be given in the form of purees; and the fatty foods and the suitable sugars and acids should be given. Sour milk is often of value in this form of constipation. It is a matter of observation that many who cannot take much butter fat in the form of cream can take it freely in the form of butter. Fresh fruit juices and honey may prove useful in spastic constipation. Pears, peaches and melons may be found useful as laxatives when apples disagree; yellow corn meal porridge and rye bread may act better in some cases than whole wheat bread and bran. In most cases raw cabbage proves to be a very effective laxative vegetable, but it occasionally disagrees, though much less often than does cooked cabbage. Bananas with the "fuz" scraped off, taken freely, may act well as a laxative in some mild cases. Stewed prunes are celebrated for their laxative effect, but it should be remembered that if taken in too large quantity they can cause irritation; and it must not be forgotten that an average prune contains ten grams of carbohydrate, which is an important consideration in diabetes.

While in many cases the general character of the diet need not be changed, it is usually good policy to approximate the lactovegetarian ideal in the dietetic prescription. It not infrequently happens that the change to a lactovegetarian or approximately lactovegetar diet, by itself produces a marked improvement in the constipation.

1218 Pacific Street.

Hyperthyroidism

(Continued from page 41)

interval and dosage practised by radiologists, and I believe that in many unsuccessful results the treatment is improperly applied. But here, again, it must be emphasized that to place the burden entirely upon the radialogist for the cure of the condition is perfectly absurd.

The province of the *x*-ray is only as an adjunct in the general treatment outlined before and its usefulness is probably about as much as vessel ligation to limit thyroid activity. However, in the great majority of cases where the patient has had a distinct symptomatology over a period of a year, which is not ameliorated by the remedial measures already outlined, indication for tryroidectomy is present, as, after all, that is the only direct means we have to-day of limiting hyperthyroidism with results naturally far more brilliant than any other form of treatment at our command to-day. But sight should not be lost of the fact that even under the most skillful preparation and technic the operation is a formidable one, with a consequent definite mortality, and that myxedema occasionally results, which is quite as distressing as the opposite condition; that injury to the surrounding structures and adhesions to important structures in the neck following the operation are sometimes produced, causing great suffering to the patient and sometimes endangering life.

Hemorrhage and toxic wound absorption are sometimes fraught with great danger to the life of the patient. Especially do I wish to impress the importance of operative procedure in this disease before marked

(Concluded on page 49)

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Glans Incognitus: The Unknown Gland

For as I passed by, and beheld your devotions, I saw an altar with this inscription, TO THE UNKNOWN GOD.
—*Scripture.*

The divinities of our endocrinological mythology—the pituitary, the adrenals, the thyroid and all the rest of the glandular host somehow leave us cold when attempts are made, through them, to account for personality traits. It won't do to declare the Plantagenet line hyper-pituitary and expect us to rest satisfied with such a socio-glandular diagnosis.

Berman has written a book which does pretty well, considering the limitation of our gland knowledge, as an exposition of personality as influenced by the endocrines.

But no theory of personality which depends upon the *known* ductless glands can account for the behavior or even much of the make-up of a Savonarola, a Cromwell, an Elizabeth, a Voltaire, a Goethe, a Spinoza, a Saint Paul, or an Emerson.

Hyperpituitarism might account for coarse features, but not for the powers that stage a battle of Marston Moor or write a Pilgrim's Progress; it might account for an Emerson's or a Newman's nose, but not for the former's essay on friendship or the latter's picture of what a university ought to be; it certainly could never account for genius.

No *known* gland would do any of these things adequately. No thyroid or adrenal gland ever *gave rise* to creative action—that is our point.

As planetary moons and unknown elements have been postulated and their discovery predicted, so dare we to write: "Whom therefore ye ignorantly worship, him declare I unto you."

Another gland remains to be discovered. That is the moral of this screed. Why sit we so idle, wholly content with our present paltry few?

But more subtle anatomists than the world has yet known must be drafted for this task. As the unconscious is related to the conscious, so may the Unknown Gland be related to the Known. The cynic will say, all the physical structures that could properly be called ductless glands are known; how then can there be an Unknown Gland?

Verily, say we to all cynics, so unscientific an attitude as yours would have left us to-day no farther along the road of progress than the age of Sydenham. The atom would still be an atom, instead of a new world in little.

Who shall decree no more cakes and ale?

What Volstead shall decree no more glands?

Mrs. Grundy in Fatal Coma

Dr. Albert Pfeiffer, Director of the Social Hygiene Division of the New York State Department of Health, recently made the point, in discussing the control of vice and social diseases, that the changing attitude toward religion greatly increases the need for correct social hygiene education. There is abundant evidence, he thinks, of the diminishing power of religion to prevent immorality. "The modern youth movement which teaches 'abolish shame' and advocates nakedness might be regarded as an extreme reaction to Mrs. Grundy's reign of silence, for centuries refusing any discussion of sex."

There you have it. The pendulum has swung all the way over.

But the times could not be more opportune for social hygiene teaching. Advantage should be taken of the weakening of the old chains. As youth seizes its freedom we shall be better enabled to remove the seals from our own lips. Then the pendulum will finally come to rest, aided by our counsel.

From this standpoint present conditions may be regarded as salutary in so far as they serve to remove the dead hand of Puritanism from the throats of all of us.

The Perils of Enforcement

There are many bases upon which effort to rationalize the Volstead Act might properly rest, but the most impressive one, to us, is the example of those Mohammedan countries in which prohibition has been thoroughly enforced in accordance with religious injunctions. It is in such countries that the opium habit gains the widest sway. The reason why the use of narcotics has not increased of late in this country is simply because there is no lack of liquor. Let Prohibition be strictly enforced and resort will surely be had to something worse, not necessarily opium, but something sinister that will serve needed purposes. It might not even be a drug. What it could be is indeed a little too dark for discussion. We must get over the childish notion that in prohibiting alcoholic beverages we in any way change fundamental peculiarities of human beings.

Film-Weakened Minds

Dr. Sanger Brown, Chairman of the State Commission on Mental Defectives, thinks that frequent and indiscriminate "going to the movies" tends to weaken the development of the normal mind and to suggest the commission of crimes to subnormal persons.

It is a spoonfed mind that is brought up on the movies instead of making its own associations—summoning up its own visual images.

As to crime, it is to be remembered that there can be no stronger suggestion than that of the actual photog-

raphy of actions of humans shown on the screen, according to Dr. Brown.

In our judgment, it is not likely that the movies are a force comparable to the attempted enforcement of the Volstead act as a prime reason for the so-called crime wave. Of course, there is probably no general increase in crime. As General Sessions Judge Collins has pointed out, the increase in New York City is limited to the more spectacular offenses in zones of the city which were formerly considered sacred. He believes that if the police force were devoted to fighting real crimes involving moral turpitude instead of dealing with violations of the Volstead act, *which do not involve moral turpitude*, that bandits and similar gentry could be effectively dealt with.

The so-called crime wave merely represents the operations of emboldened criminals in the districts once but little exploited by them. The criminal is not necessarily emboldened by drink, but by a psychological change in him which is a reflex of the immoral social effects of the Volstead act.

The accomplished, typical criminal is seldom a movie fan, in all probability—and perhaps seldom an alcohol addict.

A Thoroughly Justified Appeal

The directors of the Physicians' Home, Inc., very properly argue that, since the charity service rendered by doctors is so huge, the public should recognize this debt by aiding the Home. It is estimated that in New York City alone the charity service given to its one hundred and seven hosptals is worth at least $16,000,000 annually, while in the country at large it figures out about $136,000,000.

As a matter of fact, the total must be far greater than the directors of the Home estimate, for their figures seem to be based wholly upon hospital service, whereas everybody knows that a vast amount of work is done without charge outside of institutions. Every general practitioner not connected with a hospital does more or less free work for the deserving poor.

At any rate, the least the public can do for us, by way of slight recognition, is to help us finance the Home.

We can dispense with some of the lavish praise we receive concerning our altruism and use a little cold cash in providing a haven for the old age of some of us who through no fault of our own fail to lay by a competence.

The Treasurer of the Physicians' Home is Dr. Albert G. Weed, 22nd floor, Times Building, Broadway and 42nd Street, New York City.

Miscellany

Conducted by Arthur C. Jacobson, M.D.

A New Feature of Vitamin Deficiency

Despite much investigation during the last decade as to the nature of deficiency diseases, little more has been done than to scratch the surface. Rapid additions to our knowledge, such as the spectacular discovery that pure cholesterol can be given vitamin activity through the influence of ultraviolet radiation, continue to be announced. Information that most concerns the practicing physician, namely, the extent to which minor degrees of vitamin deficiency modify human health, is still lacking, however. What relation, if any, has vitamin deficiency to resistance to infection, to fatigue, to well being? Most of the investigation of vitamins up to the present having been carried out in the laboratories of the physiologists and biochemists, the anatomic changes resulting from dietary deficiency have perhaps not yet been investigated as much as may be profitable. At least that is the inference that may be drawn from the interesting observations just reported by a pathologist, Wolbach, of Harvard, on the effects of protracted deprivation of fat-soluble A vitamin.[1]

It has long been known that changes occur in the eye, the so-called xerophthalmia or keratomalacia, associated with drying, hornification and infection of the cornea, which have been considered to be characteristic of a deficiency of fat-soluble A. Wolbach and Howe find, however, that the eye changes are by no means the only anatomic effects of this deficiency, for they are only a part of a remarkable, widespread tendency for transformation of secreting and ductal columnar epithelium, or of transitional epithelium, into the heavily hornified type of epithelium normally serving for protective purposes. This metaplasia is found not only in the cornea and parocular glands, but even more extensively in the entire respiratory tract, from nose to bronchi; it is also found in the lining epithelium of the urinary passages, the salivary glands, the prostate, the uterus and oviducts, and the pancreatic ducts. Besides this tendency to keratinization there occurs a marked loss of fat, despite the presence of an abundance of fat in the animal's diet, and atrophy of glandular organs, especially the testes, spleen and salivary glands; but these atrophic changes are produced also by a deficiency of some of the other vitamins. Necropsy in a single case of deficiency of fat-soluble A in a child[2] has revealed hornification of the epithelium in the lungs, uterus, submaxillary glands, pancreatic ducts and renal pelvis, so that this effect seems to be a general one.

The process of keratinization begins in numerous foci, apparently independent of local infection or trauma, and spreads out from these, sometimes the hornified cells underlying for a time the original epithelium, which eventually is lost. Sometimes this process becomes so extensive that the hornified masses obstruct ducts, so that cysts are produced, and in the lungs bronchiectatic cavities form. A feature that is certain to arouse discussion is the resemblance at times of this proliferation of hornifying epithelium to the early stages of carcinoma formation, especially since occasionally metaplasia of columnar to stratified epithelium precedes carcinoma formation, particularly in the lungs and renal pelvis. Is it possible that a deficiency in fat-soluble A has anything to do with the formation of squamous cell carcinoma? At first glance this seems unlikely, for in general good nutrition seems to be more favorable for cancer formation than poor nutrition. But as yet we know too little about the relation of nutrition to cancer, or about the relation of vitamin content of human food to vitamin absorption and utilization, to speak with any assurance on this question. In any event, the demonstration that an absence of something in the food may cause active overgrowth and change in the character of body cells is an important episode, with stimulating possibilities for future developments.—*Editorial Jour. Amer. Med. Assn., Dec.* 26, 1925.

1. Wolbach, S. B., and Howe, P. R.: J. Exper. Med. 42:753 (Dec.) 1925.
2. Wilson, J. R., and DuBois, R. O.: Keratomalacia in Infant, with Postmortem Examination, Am. J. Dis. Child. 26:431 (Nov.) 1923.

(Concluded from page 46)

degenerative changes have occurred in other organs. Too often is the operation delayed until even after thyroidectomy the patient does not recover because of well-developed degenerative lesions throughout the body. It is here also important to emphasize the fact that when your patient returns home after operation she is still an invalid, and if the best results are to be obtained we must follow the dictum that a patient should be treated in the same manner after operation as if he had not undergone it.

In conclusion, therefore, it is my impression that every case of hyperthyroidism is a medical case at some stage of the disease (also ligation and *x*-ray as preliminary), and that surgery should be instituted not as a first resort but in continued hyperthyroidism, especially with a constant high metabolic rate and no alleviation of the symptomatology but before permanent organic degeneration supervenes.

1204 Spruce St.

Diagnosis and Treatment

Cyclic Vomiting

This is a condition which may give rise to grave anxiety. At intervals of several weeks a child has an acute attack of vomiting ushered in by malaise, accompanied by a verying degree of abdominal pain, resulting in prostration, sometimes of an extreme, even fatal, degree. The duration of the attack is usually 2-5 days, and there may be a considerable degree of fever. In the intervals the child seems in good health. The condition is associated with previous constipation, fatty changes in the liver, abundance of acetone in the breath and urine, and an increased excretion of creatinin in the urine. It is still a matter of dispute whether bowel-stagnation or faulty liver-metabolism is the prime cause of the condition.

Treatment consists in brisk purgation as soon as the prodromal symptoms of lassitude, irritability or pallor appear, combined with alkalies in large doses. Sodæ bicarb., gr. xxx, should be given every three hours by the mouth, or, if vomiting be severe, rectal injections containing two drachms of bicarbonate can be given with catheter and funnel twice daily. In the intervals between the attacks fats must be withheld from the dietary, a daily action of the bowels ensured by the use of liquid paraffin and a weekly dose of a mercurial purgative.

The parents of these children should be warned that should the question of an anesthetic ever arise, the medical man in charge at the time should be informed of the child's history of cyclic vomiting.—(*Practitioner.*)

Benign Neoplasms

R. E. Bledsoe concludes that:

1.—The human uterus, during menstrual life, is prone to neoplastic growths.

2.—Parous women seem more prone to the submucous variety, i. e., fibromyomas and so-called mucous cysts.

3.—Nulliparous and unmarried women show a greater susceptibility to the interstitial and subserous varieties.

4.—While every race is prone to these conditions, the mulatto negro seems particularly susceptible.

5.—Pain is a prominent symptom in the second and third types, depending upon location, size and complications.

6.—The only treatment worth consideration is operative.

7.—The predominant symptom, and the one the author wishes to stress, is hemorrhage. Where other causes can be eliminated, the gyneclogist should always suspect "fibroids."—(*Clin. Med.*, June, 1923.)

Local Anesthesia in Kidney Surgery

Carroll W. Allen considers local anesthesia by direct injection simpler, quicker and more certain of satisfactory anesthesia than the paravertebral method. As a preliminary medication morphin 1/6 grain is given by hypodermis. The patient is placed on the table in the kidney position, lying across a small, soft pillow placed under the opposite lumbar region. A long needle is entered about the center of the proposed incision and the tissues injected in a fan-like manner from the skin down to the quadratus lumborum muscle by successive thrusts of the needle from the ribs above down to near the crest of the ilium below. In the upper part of the field the 11th and 12th dorsal nerves are both injected. The quadratus lumborum muscle is then injected at several points along its proposed line of exposure. The incision is carried down to the outer edge of the quadratus and the 12th dorsal nerve is retracted to the posterior side of the wound. After separating the abdominal muscles from the quadratus the cellular tissue in front is entered and additional injections made. Four or five injections of about 5 cc each are now made up and down the vertebral column and quite close to it with a view of reaching the rami communicantes from the lumbar nerves to the sympathetic chain. Having done this satisfactorily the kidney is exposed and operated upon without complaint.—(*Am. Jour. Surg., Anesthesai Supplement*, 1925, 1925, xxxix, 76.)

Blocking the Splanchnic Nerve to Arrest Vascular Spasm in the Kidney

Havlicek observed recovery in anuria of two children with scarlet fever nephritis and also in anuria in the course of eclampsia after anesthesia of the splanchnic nerve had been induced. The injection, which had been recommended by Neuwirth in reflex anuria, apparently breaks up the spasm of the afferent arteries of the glomeruli, which constitutes—according to Volhard—the most important phenomenon in acute nephritis. Palpation of the kidney helped in another patient. He suggests also an intravenous injection of papaverin.—(*Zent. f. inn. Med.*, Leipzig 46:465.)

Overcoming Children's Fears

"Children quickly adopt the attitude of their parents, be it one of bravery or fear," says Dr. D. A. Thom. "Many mothers wonder where their children get their fear of lightning or animals, fogetting that they themselves have shown fear when they thought the children were not noticing.

"Such was the case with little Ellen. Her mother thought the child inherited from her a fear of the dark and everything strange. Ellen would awake screaming at night, saying some one was climbing in at the window. Her mother compared this in the child's hearing to her own fear of being left alone of an evening when she thought every sound meant a lurking marauder. The mother had heard many ghost stories in childhood, and though she denied that she had ever told them to Ellen, she talked quite freely about them in her presence. It is not hard to see where this child's "inherited" fears originated.

"If the child develops a fear of loud noises and flashes of light, such as thunder and lightning and firing of guns, he can overcome it only with the help of intelligent suggestion from the parents. He must see from their attitude that there is no occasion for fear. The mother who is terrified by these situations and whose fear is openly demonstrated before the child can be of no assistance to him. Imitation clearly plays an important part in the development and control of fear. This may be seen, for instance, if things go wrong at sea and a ship is in danger. One panic-stricken person may start a stampede for the lifeboats, whereas one calm and fearless officer can quell the impending panic and control the situation.

"Vague and poorly formulated ideas about death are the basis of more mental anxiety in children than is generally supposed. To one child death meant being buried in a hole, another child had a fear of being buried alive, and many children are disturbed by the line in the evening prayer which is familiar to most children, 'If I should die before I wake.' It would be impossible to state all the vague fantasies of childhood about this ever-present problem of death, but it should not be difficult to give the average child a conception of death and the hereafter which will do much to allay the common fears surrounding this mystery.

"Things said in jest may cause great anxiety to a little child. A man, now a college professor, relates how he suffered for weeks in boyhood because some one told him that if he ate bread and molasses horns would grow on his head. He at once gave up eating that delicacy without explaining to anyone through fear that he would be laughed at. Then he imagined that he had lumps on his forehead. In a frenzy of anxiety he asked his mother if she could feel the horns, and she, thinking it was part of some game, said 'Yes, I believe I do.' The gcown man still feels the pain of that experience.

"Fear is a driving force in human conduct. It makes us do things; it keeps us from doing them. It protects from danger, and without a reasonable amount of fear mankind could not live. It is useless to talk about eradicating fear, but in training the child every effort should be made to see that fear does not become a curse instead of a means of protection."

* This article is part of Publication No. 143 of the Children's Bureau of the U. S. Department of Labor, Washington, D. C. The entire bulletin may be secured free by writing to the bureau.

Two Diphtheria Carriers Relieved by Tonsillectomy

A young lady, age 19, living in the central part of New York State, contracted clinical diphtheria on December 29, 1924. The patient was given 25.000 units of antitoxin, and made a rapid recovery, but cultures continued positive for a period of eight weeks. On the advice of her physician a tonsillectomy was performed on February 25, 1925 and subsequent cultures were all negative. A second member of the family, a boy of 10, had been given an immunizing doze of antitoxin when his sister first became sick. Cultures taken from his throat were all negative during his sister's illness. On May 29, however, he developed severe laryngeal diphtheria, which cleared up rapidly after the administration of 42 000 units of antitoxin. Release cultures were all positive until the second week in July when a tonsillectomy was performed. Subsequent cultures were negative, indicating that the tonsils were the seat of the carrier condition, and the quarantine was raised on July 22.

In such cases complete enucleation of tonsils and adenoids usualy results in clearing up the carrier condition. The boy's case serves as a good illustration of the fact that an immunizing dose of antitoxin gives only a passive immunity which is not of long duration. (*Health News.*)

Tuition Fees and Scholarships in Medical Schools

As shown in the statistics published this week, the average tuition fee for each student is now $236, or just double what it was in 1910. In 1921 the average fee paid by each student was $185, in contrast with which the actual cost of his medical training was $655—more than three times what he paid in fees. With the greatly increased equipment in our medical schools, the larger number of salaried expert teachers, and other expensive developments, the average cost per student is now many times greater than it was in 1910. In that year several medical schools reported that all costs were paid from students' fees, and some were said to have had a surplus remaining. Because of the greatly improved construction, students who can afford to do so should be expected to pay at least a fair proportion of the cost, and a reasonable increase in tuition fees was justifiable. It has been generally recognized that the full cost of maintaining the modern medical school cannot be met from students' fees, so that additional funds are now provided from state aid or private endowment. Recognizing the desirability of financing some students who cannot afford to pay tuition fees, about fifty medical schools have provided, in the aggregate, about 550 scholarships, and thirty or more have set aside generous loan funds. Nevertheless, with the increasing charges for tuition a larger provision of such aids is needed. They are especially important at this time, since the sevrity of the modern medical curriculum makes it more difficult for a student to earn money during his medical course. Reports indicate that many students even now earn a major part of their expenses at the same time they carry their medical studies. It is a question, however, whether the money so earned is not at the expense of much valuable experience which the student otherwise might have obtained. It is during the student's medical course, while he is under able instructors, that he has the best opportunity of his lifetime to study and observe patients in both dispensary and hospital. In order to make the best use of this opportunity, it would be better to borrow money with which to meet expenses, or to have the advantage of a free scholarship. For those who have money to give, therefore, it would be hard to find a more worthy object than in the endowment of more of these scholarships. In the granting of the scholarships, proper safeguards should be established so that the chief object for which they are established, the helping of those who are really worthy of financial aid, may not be defeated. (*Journal A. M. A.*, Aug. 22, 1924.)

The Incidence and Significance of Smooth (or Indurative) Atrophy of Base of the Tongue

D. Symmers says that Virchow called attention to the slight smooth atrophy at the base of the tongue, but for a long time the clinical and pathological significance did not receive systematic consideration.

Autopsies made on 6,583 cases showed that 200 had suffered from syphilis. In 103, smooth atrophy of the base of the tongue was present (69 per cent). In 31 per cent the base of the tongue was atrophic without anatomical evidences of syphilis being present. In only 2 was it found in early syphilis. Lesser found 44 per cent of 166 cases of smooth atrophy of the base of the tongue associated with syphilis. Skladney found the condition of 20 of 24 cases of late hereditary syphilis while Seifert did not find it in 26 cases of congenital syphilis. Scholtz, among 71 cases found papular and erosive lesions, but not atrophy, at the base of the tongues of syphilitics. The lymphoid follicles in active syphilis were not infrequently involved. N. B. Potter, in examining 400 individuals, concludes that if the root of the tongue is normal, this is valuable in the exclusion of syphilis from the diagnosis.

In the least advanced cases the base of the tongue is pale, flattened, relatively smooth and firmer than normal and the lymphoid follicles are few and small. They may be seen as pin-head size nodules scattered beneath the epithelial layer. In advanced cases the lymphoid follicles are invisible to the naked eye, and the already named symptoms more marked. Sometimes the epiglottis is pulled forward or to one side and may show small indentations on its free border.

The author thinks that genuine indurated atrophy of the base of the tongue is invariably the result of syphilis. A number of old cases of syphilis, however, do not present this anomaly.—*Am. J. med. sc.*

Renal Function Tests

White & Ritch say that tests of renal function, whether by the use of phenolsulphonephthalein or indigo-carmine, naturally have a place in diagnosis, but their actual value has always been a much mooted question. In our work, very little importance is given to our present methods of functional estimation.

The phthalein tests, as suggested by Geraghty and Rowntree, was extensively used until very recent years and was considered of great value in the diagnosis of certain kidney maladies, but we think all will agree that its value is questionable.

A functional estimation that will inform us as to the reserve power of the kidney when its mate has been removed, and the remaining organ is called upon to put forth extra effort, would be received as a distinct advancement in urological surgery. All of us have seen cases when the remaining kidney failed utterly to carry the load, although the functional output, urine findings, radiograms and so forth appeared normal; also, we not uncommonly encounter, in cases of prostatic surgery, a somewhat parallel condition, as patients with remarkably good phthalein outputs often run a wretched postoperative course. Naturally, other conditions are always to be considered. We do not mean to infer that these tests are valueless.

Indigo-carmine is of distinct utility in assisting us in the location of ureteral orifices in cases of rabeculated bladder, also in noting the time of appearance in cases where the ureters are difficult or impossible to catheterize; but, we are of the opinion that the present tests of functional estimation are losing authority in diagnostic value. They estimate the filter power of kidney and not the reserve index.

We have considered, in a rather general way, three important phases of urological diagnosis, namely, cystoscopy with ureteral catheterization; pyelography; and renal functional estimation. All are important individually but preeminently so when used conjointly in obtaining an accurate and trustworthy diagnosis. —(*Clin. Med.*)

Hematuria

Modern urology, with its refined methods of diagnosis and treatment, has clarified many hitherto obscure chapters in this important department of medicine and surgery, says White & Ritch. The days of explanatory cystotomies, and exploratory lumbar incisions for renal diagnosis are long since past. Patients with such important symptoms as hematuria, colic, pyuria and so forth are thoroughly investigated in order to ascertain the exact cause and extent of the difficulty. We can not too forcibly impress you with the importance of a careful and thorough search for the cause of hematuria, a symptom so commonly seen, and upon which volumes have been written, yet so unscientifically handled in many instances. Three cases illustrating such conditions, all of which were consultation cases seen within the past six months are presented:

Case 1.—G. B., age 62, male, presented himself with a history of having had occult blood in the urine at various times for the past three years. Had had very little discomfort but suffered considerable loss in weight and strength. His former treatment consisted of rest, diet, and hematinic tonics. No attempts had been made to ascertain the exact cause, although he had been under the care of two authorized practitioners of medicine. The final diagnosis was papillary carcinoma of the right renal pelvis and ureter.

Case 2.—M. C., age 42, male. The patient was refused life insurance due to microscropic blood in urine. Subjective symptoms were practically nil and he had been treated by several physicians. The patient had been treated palliatively in every instance with no attempts to determine the cause.

The diagnosis was a small illusive ulcer on the superior surface of the bladder.